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MOTE STORAGE

Semi-Annual Index

Vol. 63 Brick and Clay Record July-December 1923

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The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

How Long Before We Take the Next Step

WHILE PAGING THRU past volumes of Brick and Clay Record in search of some particular data of interest to a subscriber, curiosity prompted us to linger possibly a little longer than the task warranted. It was highly interesting to read the comments on topics of greatest interest to the clay industry in years gone by. Our research took us back about 12 years — 12 years which reflected the great strides the clay industry has made.

It must seem strange now that there was at one time a great deal of discussion as to the advisability and efficacy of face brick manufacturers distributing house plans. It was feared that there was grave danger of incurring the resentment of architects. Other subjects were also talked of such as the advisability of comparing costs with one another—of advertising such a "well known" product as brick—of distributing thru the dealer, and numerous others. Price cutting was much more prevalent and vicious in those days than now. All these things were recounted on the editorial pages of Brick and Clay Record and the editors ten or more years ago, pointed out a road that would lead to better things.

It is indeed gratifying to notice that modern experiences and business practices have proven that Brick and Clay Record's preachings years ago were not only sound but eminently practical. The clay industry has overcome many of its obstacles and difficulties along the very lines which Brick and Clay Record has long emphasized.

Brick and Clay Record is at present wielding the cudgel of its influence in behalf of a sound policy of dealer distribution. In numerous articles and editorials it has pointed out that the way to greater markets lies thru the building supply dealer's yard. It is pleasing to know that these seeds have not fallen entirely upon barren soil.

J. M. Adams in his recent address before the Ohio Red Division of the American Face Brick Association, which was printed in part in the June 26 issue of Brick and Clay Record, has by his remarks at that meeting endorsed practically all of Brick and Clay Record's preachings on the dealer question. His stand on this question follows very closely the conclusions reached by Brick and Clay Record after a field investigation, involving personal interviews with dealers. These articles were published early last spring.

It is a great pleasure and a great tribute for Brick and Clay Record that a leader in his industry and a man with vision like J. M. Adams, president of the American Face Brick Association, is preaching from the platform which Brick and Clay Record has been building for a long time. More power to him.

* * *

Why You Are Not Making Money

EXCEPT in a few instances, clay products manufacturers are very busy trying to fill the orders on their books. In most cases production and shipments are far behind orders. Despite this general condition, manufacturers are dissatisfied and disgruntled with conditions.

The natural supposition would be that when demand exceeds supply everything should be "rosy"—but very evidently this is not true at the present time, especially not in certain sections. The trouble lies in the low margin of profit with which manufacturers must be satisfied. Many hesitate to raise prices because they fear a drastic reaction on business. Quite naturally profits are low because production costs are high. Production costs on the other hand are high, not so much because of high wages but chiefly because the labor that is available is unreliable, irregular and irresposible and therefore is not producing what it should. Moreover, there is not enough labor.

Manufacturers would be making excellent profits if they could get the production out of their plants that they should. What is the answer to this problem?

You will find that the managers are looking for equipment or processes that will minimize their dependence upon labor. Things are at such a stage that the amount of money a new system or machine will save is a secondary consideration. The thing that is important is "How much labor will be saved."

Those who were skeptical at first as to the permanency of present conditions have fought the labor shortage and resultant inefficient production long enough to become sold on the idea of substituting machinery for labor whenever possible. This year has already seen tremendous changes on a great many plants in the industry, along more modern lines, which means new equipment and methods.

* * *

Organized Effort and the Cement Industry

AN EXCELLENT LESSON of what organized effort in promotional and engineering activity can do is reflected indirectly in the symposium on concrete that was given at the recent meeting of the American Society for Testing Materials. The facts here brought out about cement and concrete clearly indicated that the supporters of the product have been overenthusiastic and are seeking to convey the idea that cement is the solution to every construction problem.

Thru advertising and intensive promotion work manufacturers of cement have oversold the use of their product. This is apparent because of the many uses to which cement has been put for which it is not suited. The symposium at the A. S. T. M. Meeting clearly shows that the use of cement has gone several steps ahead of what experience and study has determined as good and efficient.

We do not claim that cement has no virtues or that it is not a valuable construction material. But we do believe that the producers of cement have, very cleverly, thru their organized promotional work, led most persons to believe that it can be used for an almost unlimited variety of uses. The "Age of Cement" germ still permeates the public.

For clay products manufacturers there is a valuable lesson to be learned from the cement industry. This very progressive industry has oversold the use of its product probably as much as 200 per cent. thru organized and combined effort. The clay industry's product, on the other hand, has been about 100 per cent. undersold, chiefly because there has been a deplorable lack of organized effort among manufacturers.

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New Jersey Men Discuss Tunnel Kiln

Annual Summer Meeting of New Jersey Association Brings Record Attendance — Raise $1,000 for Rutgers College Ceramic Department — Treischel Talks on Feldspar Specifications

WHAT WAS ACCLAIMED to have been the best attended and, in every respect, the most successful gathering in the history of the New Jersey Clay Workers' Association and Eastern Section of the American Ceramic Society was the summer meeting of that body held at the Trenton Country Club, Trenton, N. J., on Friday, June 29. The club's unusually spacious dining hall was taxed to capacity for luncheon which was made all the more enjoyable by informal and alike witty and informative talks during the concluding courses. Outstanding thruout the meeting was the spirit of practical cooperation and teamwork that animates the membership, and it did one good to see the speed with which $1,000 was raised for the work at Rutgers College, New Brunswick, especially so as most of the donors had previously contributed representative sums to this worthy cause. It was a pleasurable privilege for Brick and Clay Record and Ceramic Industry to be permitted to participate in these contributions.

Andrew Foltz Is Toastmaster

At the luncheon, President Andrew Foltz acted as toastmaster, ably assisted by Former President Charles R. Cook, who said that New Jersey was the leading state in the clay industry, "if not in quantity, in quality." Will P. Blair, of Cleveland, founder of the National Paving Brick Manufacturers' Association, who recently returned from a trip to Spain and other European countries, spoke of the wonders of the Alhambra and other European works of monumental art in their bearing on the ceramic industries. He said that London is a "brick-built city," and made a strong plea for a more earnest study of permanent road building by civil engineers, the solution of the vexatious problem engendered by the modern automobile traffic of a "permanent track." He said that we make brick in this country that will virtually defy abrasive action, but that there must be something underneath to hold it up and that in this connection the moisture problem deserved the most energetic study.

Roofing Tile Popular in Australia

Mr. Campbell, a visitor to the United States from Sydney, New South Wales, said that in Australia much larger use of brick per head of population is in evidence than in the United States. More roofing tile is being used, and the poorest cottage has brick walls and red roofing tile. Tar-covered roofs, such as are so numerous in this country, are not seen in Australian cities. In fact, red roofing tile has become so common there that the better class of houses had to be distinguished thru some other color of tile, and green was first resorted to. The objection to green tile, however, was that the color duplicated that of the abundant foliage surrounding dwellings, and so a very delicate bronze finally came into vogue. The gloss of some of the Dutch tiles frequently became too glaring in the sunshine, and softer colors and duller tones were demanded. Mr. Campbell drew attention to the difference in the sizes of American and Australian brick. The latter, he said, are usually 9x4½x3 inches and weigh about nine pounds. He expressed warm thanks to the many ceramic manufacturers and technologists who had so generously assisted him with information during his visit.

Charles H. Cook suggested that the clay industry could spend money no more profitably than by following the example of the electrical porcelain manufacturers in employing a certified public accountant to work out proper cost-finding methods. He said this should be done by their organization rather than by the individual manufacturer as only in this way would the entire industry benefit thereby.

R. H. Minton, chairman of the Executive Committee, reported that on the occasion of the 74th birthday anniversary of Charles A. Bloomfield a photograph of the Ceramic College at New Brunswick was presented to him in behalf of the association. Later, on motion of Mr. Cook, a telegram was ordered sent to Mr. Bloomfield, expressing regret at his absence because of illness and expressing the hope that in future he would enjoy good health.

Calls Attention to A. C. S. Meeting

Mr. Minton directed the association's attention to the meeting of the American Ceramic Society to be held at Atlantic City in February, 1924, and the preliminary work to be done to make that meeting a success. He also announced with gratification the establishment at New Brunswick of an experiment station for non-metallic minerals by the U. S. Bureau of Mines, which will be in charge of Oliver Bowles.

On motion of Mr. Minton, President Foltz appointed a committee of five to work with the Board of Trustees in the promotion of the ceramic course at Rutgers College and another committee to further the preparations for the American Ceramic Society's Atlantic City meeting.

Harrop Talks on Tunnel Kilns

"The Application of Tunnel Kilns in the Firing of Ceramic Wares" was the theme of a highly informative address by Prof. Carl B. Harrop, Department of Ceramic Engineering, Ohio State University, Columbus, the first of the two technical papers scheduled for the afternoon session. Prof. Harrop, after stating that he would treat on tunnel kilns in general and not any one particular type, said that no better illustration that this was an age of specialists and specialties could be furnished than the indicated adoption of the tunnel kiln for the firing of ceramic and some other ware. Compared with the periodic kiln it offered a fuel saving of 50 to 85 per cent. Certain ware could probably not be handled in the tunnel kiln, but for the great bulk of white and heavy clay ware it was eminently well suited. No manufacturer should make any decision until after having seen tunnel kilns in operation. Some marked successes had been scored. In one case a tunnel kiln had been installed for the firing of bisque ware last September, and now, after 9½ months of use, it had been possible to write off the entire cost of the kiln, a better than 100 per cent. investment.

Why Failures Occur

Failures, said Prof. Harrop, are almost invariably the result of a lack of understanding of the requirements to be met, of a lack of knowledge of the fundamental conditions essential to the successful firing of the particular ware to be handled. He also pointed out that plant owners must bear in mind that higher-type apparatus performing work better and cheaper, calls for higher type organization, higher type human material. The table printed elsewhere shows the number and type of tunnel kilns in use.

A Remarkably Large Attendance Featured the Summer Meeting of the New Jersey Clayworkers Association and Eastern Section of the American Ceramic Society.

After his talk, Professor Harrop devoted himself to answering the invariable question: "What minimum capacity will justify the installation of tunnel kilns?" His answer was that no flat response could be made to this query as everything depended upon individual conditions. The savings in fuel and labor would have to be estimated on the basis of the individual plant, and after all, the whole problem was one of accounting. If the potential savings warranted it, the installation of a tunnel kiln was nothing more than a good business move. The contention that because the industry was thriving at this time and because in some isolated cases men had even gone so far as purposely to expend money for plant improvements rather than pay excess profits taxes, manufacturers were unduly easily induced to install tunnel kilns, would have to be offset by reminding the industry that when the turn in business did come, price would be the outstanding weapon of competition and the manufacturer who is most advantageously placed in production costs would have the edge on his competitor.

Where Fuel Loss Occurs

Reviewing the various fuels: coal, natural gas, fuel oil, and producer gas, Prof. Harrop said that he had kept away from the last-named as much as possible because of the difficulties involved in its transportation. Capacity controls the percentage of possible fuel saving in the tunnel kiln. No matter what the cross section of the kiln, whether it is two or six feet wide, it involves three primary causes of fuel loss: products of combustion, loss in discharged ware, and radiation and ground conduction loss. A large part of the total loss, said Prof. Harrop, was caused by radiation, as he had observed even in well-insulated installations. The larger the cross section of the kiln, however, the larger the saving in fuel. As to the range of cross sections, they run all the way from 20 to 24 inches for decorating kilns and 25 to 30 inches for bisque kilns up to six feet two inches, and in Europe much larger kilns are in use for the burning of magnesite brick. No limits to size are so far known. Tunnel kilns are being lengthened all the time, but Prof. Harrop expressed the hope that the limit would be reached at 300 to 400 feet length because of the steadily growing difficulties connected with their erection, the longer they grow.

Growth of Tunnel Kiln

In conclusion Prof. Harrop whose contentions were impartial thruout and who merely sought to stimulate the industry's interest in investigating the merits of the tunnel kiln, pointed out that unfortunately he had frequently found that whenever labor saw that the tunnel kiln made possible a 25 per cent. saving in labor costs, union demands would at once be formulated to offset to a large extent such savings and profits.

Phillip Dressler pointed out that the growth of the tunnel kiln was remarkable when one considered that in 1915 there were but three such kilns in use and now, according to the chart shown by Prof. Harrop, there are 80. He thought the war had much to do with this progress and also the fact that the tunnel kiln specialists had found out in the last few years their limitations.

Taine G. McDougal, ceramic engineer of the A. C. Spark Plug Co., Flint, Mich., said that he spoke from the unbiased point of view of the kiln user and not that of the manufacturer of kilns. He said their tunnel kiln was by no means a "royal flush," but that depending upon the mass of ware that was passing thru and the character of the ware, tunnel kilns were of great advantage. He said that the A. C. Spark Plug Co. was now building three kilns, five feet in width with 10 to 12 inches clearance. Uniformity of heat control was especially essential in small units, such as spark plug insulators, and it is on these that Mr. McDougal based his experiences with the tunnel kiln.

Says Tunnel Kilns Too Short

C. F. Geiger thought that the principal difficulty in the past had been that most tunnel kilns were built too short. The new ones his company was planning to build would be at least 350 feet in length. Moreover, many tunnel kiln installations in the past had very poor foundations and showed lack of flexibility. They would have to be designed around the product which it is sought to fire in them, and its thermal requirements. One of the most discouraging features had been that when ware is unsatisfactory at the receiving end, a periodic kiln would yield such off-grade ware for one or perhaps two days, but a tunnel kiln might keep this up for many days. His company, Mr. Geiger said, was now saving thru the use of tunnel kilns, 50 per cent. in fuel, 80 per cent. in setting costs, and at least 20 per cent. in the discharge of ware. The loss in ware had been reduced to three-tenths per cent. Of course, this referred solely to carborundum refractories.

Treischel Discusses Feldspar

Chester C. Treischel, General Electric Co., Pittsfield, Mass., secretary of the White Wares Division of the American Ceramic Society, presented the subject of "Feldspar Classifications and Specifications," which had been discussed at the Pittsburgh meeting of the American Ceramic Society. He said that the American Ceramic Society should not, in his opinion, issue specifications. That was a matter for the individual consumer and producer, but classifications regarding chemical composition, fineness, and fusing temperature might be advantageously adopted for the benefit of the industry. A committee was appointed at the Pittsburgh meeting to investigate thoroly this problem and to report at the next meeting. Consumers and producers are represented on this committee. It is proposed to indicate high soda, high potash, and the blended types of feldspars along the lines followed in the pencil industry, that is by single and double initials. Mr. Treischel explained fully the recommendations which the committee plans to make and which have been published previously, asking those present to offer their opinion or suggestions for changes. Apparently those in attendance seemed satisfied with the proposed classifications as no one had anything to offer.

	Didier-March	Owens	Zwermann-Russell	Harrop	Dressler	Miscellaneous	TOTAL
Vitreous China		1		2			3
Semi-Porcelain		3		4	2		9
Sanitaryware			6	3	4		14
Cooking & Art					1		1
Stoneware				1	1		2
Refractories	2				3	1	6
Floor & Wall Tile		4		3	5		12
Terra Cotta					1		1
Brick & Tile		5		2	6	2	15
Drain Tile					1		1
Roofing Tile			1	1			2
Elec. Porcelain	1			2	3	2	8
Carbon Electrodes	1	1	1				3
Abrasives					1		1
Specialties	2						2
TOTAL	7	14	8	18	28	5	80

Chart Showing Number and Type of Tunnel Kilns in Use and Kind of Product Burned.

A rising vote of thanks to the speakers concluded the meeting.

List of Attendance

Chas. T. H. Phillips, Sneyd Enameled Brick Co., Trenton, N. J.
George H. Brown, Ceramics Department, Rutgers College, New Brunswick, N. J.
F. L. Steinhoff, "Ceramic Industry" and "Brick and Clay Record," Chicago, Ill.
Roland V. Tailby, Matawan (N. J.) Tile Co.
Andrew Foltz, Lambertville (N. J.) Pottery Co.
C. C. Treischel, General Electric Co., Pittsfield, Mass.
L. A. Thompson, General Electric Co., Pittsfield, Mass.
F. J. Wolff, The Monument Pottery Co., Trenton, N. J.
Charles W. Crane, 17 Battery Place, New York City, Crossman Co.
Wm. Crawford Hirsch, Rahway, N. J.
K. E. Ward, Newark, N. J.
Enoch Mountford, Anchor Pottery, Trenton, N. J.
Herbert W. Moore, Precision Grinding Wheel Co., Philadelphia, Pa.
Crawford C. Maderia, Philadelphia, Pa.
Leonard S. Briggs, Lenox, Inc., Trenton, N. J.
H. M. Scott, Trenton, N. J.
I. R. Edgar, Metuchen, N. J.
L. E. Riddle, Jr., Metuchen, N. J.
D. R. Edgar, Metuchen, N. J.
George Simcoe, Trenton, N. J.
C. S. Maddock, Jr., Thos. Maddock's Sons Co., Trenton, N. J.
C. B. Yomens, Thos. Maddock's Sons Co., Trenton, N. J.
Dr. Emil Weber, Thos. Maddock's Sons Co., Trenton, N. J.
C. J. Hudson, Norton Co., Worcester, Mass.
Eric B. Turner, Trenton Flint & Spar Co., Trenton, N. J.
J. G. Carter, Trenton, N. J.
George W. Dilks, Jr., Philadelphia, Pa.
O. E. Mathiasen, N. J. Terra Cotta Co., Perth Amboy, N. J.
L. E. Putnam, Celite Products Co., New York City.
N. A. Ragland, Perth Amboy (N. J.) Tile Wks.
F. H. Burroughs, Star Porcelain Co., Trenton, N. J.
F. S. Thompson, Sayre & Fisher, Sayreville, N. J.
H. H. Sortwell, Star Porcelain Co., Trenton, N. J.
S. O. Conkling, Conkling-Armstrong Terra Cotta Co., Philadelphia, Pa.
A. B. Christopher, Elk River Clay Products Co., North East, Md.
V. B. Case, Paper Makers Importing Co., Easton, Pa.
C. C. Engle, United Clay Mines Corp., Trenton, N. J.
M. C. Hendrickson, United Clay Mines Corp., Trenton, N. J.
W. J. Stephani, Ketcham Terra Cotta Co., Crum Lynne, Pa.
I. L. Conkling, Conkling-Armstrong Terra Cotta Co., Philadelphia, Pa.
Donald Hagar, Mosaic Tile Co., Matawan, N. J.
A. W. Christiana.
M. D. Warren, Ceramic Traffic Association, Trenton, N. J.
H. S. Landell, Proctor & Schwartz, Inc., Philadelphia, Pa.
J. Prosser, Morton Clays, Trenton, N. J.
Thos Layden, Fords Porcelain Wks., Perth Amboy, N. J.
Henry Hansen, Fords Porcelain Wks., Perth Amboy, N. J.
E. C. Hill, Conkling-Armstrong Terra Cotta Co., Philadelphia, Pa.
Geo. A. Williams, Atlantic Terra Cotta Co., Perth Amboy, N. J.
Ralph E. Hanna, Atlantic Terra Cotta Co., Perth Amboy, N. J.
Chas. E. Jacquart, American Enameled Brick & Tile Co., South River, N. J.
J. W. Hepplewhite, Johns-Manville Co., Manville, N. J.
I. D. Hagar, New York City.
L. R. W. Allison, 170 Roseville Ave., Newark, N. J.
F. H. Hastings, Hartford Faience Co., Hartford, Conn.
W. H. Fulper, Fulper Pottery Co., Flemington, N. J.
J. M. Stangl, Fulper Pottery Co., Flemington, N. J.
Wm. P. Blair, National Paving Brick Mfrs. Ass'n., Cleveland, Ohio.
Theo. A. Randall, National Brick Mfrs. Association, Indianapolis, Ind.
F. W. Morris, Trenton, N. J.
W. J. J. Bowman, Trenton (N. J.) Fire Clay & Porcelain Co.
T. A. Klinefelter, Trenton (N. J.) Fire Clay & Porcelain Co.
Albert Gerber, Trenton (N. J.) Fire Clay & Porcelain Co.
Donald Butler, Trenton (N. J.) Fire Clay & Porcelain Co.
Ed. Dithridge, Trenton (N. J) Fire Clay & Porcelain Co.
D. P. Forst, Robertson Art Tile Co., Trenton, N. J.
Robert E. Anderson, Robertson Art Tile Co., Trenton, N. J.
J. M. Kreger, Woodbridge (N. J.) Ceramic Corp.
Carl Bloor, Trenton, N. J.
Jos. Kreger, Trenton, N. J.
H. C. Corbin, Conn. Porcelain Co., Trenton, N. J.
P. M. Cranmer, Conn. Porcelain Co., Trenton, N. J.
Carl B. Harrop, Columbus, Ohio.
Otto W. Will, Roessler & Hasslacher Chemical Co., Perth Amboy, N. J.
D. R. Winans, Pardee Co., Perth Amboy, N. J.
Chas. F. Eilert, Pardee Co., Perth Amboy, N. J.
Hubert W. Warden, Jr., Pardee Co., Perth Amboy, N. J.
Morgan B. Eilert, Pardee Co., Perth Amboy, N. J.
Gregory C. Hill, Locke Insulator Co., Baltimore, Md.
R. J. S. Barlow, Roessler & Hasslacher Co., Trenton, N. J.
George W. Keller, Trenton, N. J.
J. A. Williams, Mitchell-Bissell Co., Trenton, N. J.
F. G. Lord, Pa. Pulverizing Co., Lewistown, Pa.
T. G. McDougal, Flint, Michigan.
Chas. Howell Cook, Cook Pottery Co., Trenton, N. J.
H. D. Foster, Washington, D. C.
Oscar Crispens, New York City.
Thos. Campbell, Sydney, Australia.
H. L. Williams, Trenton, N. J.
F. W. Dinsmore, Imperial Porcelain Wks., Trenton, N. J.
Chas. F. Geiger, Carborundum Co., Perth, N. J.
Geo. C. Crossley, United Clay Mines Corp., Trenton, N. J.
Frederick Stanger, Enterprise White Clay Co., Philadelphia, Pa.
L. Morton Morley, Brown Instrument Co., Philadelphia, Pa.
R. L. Clare, Federal Terra Cotta Co., Woodbridge, N. J.
R. H. Minton, General Ceramics Co., Metuchen, N. J.
Fred A. Whitaker, General Ceramics Co., Keasbey, N. J.
John B. Maddock, Trenton, N. J.
Leslie Brown, Lenox, Inc., Trenton, N. J.
Clifford C. Clarke, Ceramics Dept., Rutgers College, New Brunswick, N. J.
M. G. Hartmann, Ceramics Dept., Rutgers College, New Brunswick, N. J.

* * *

WINS $100 PRIZE FOR PAPER ON VITRIFIED CLAY PIPE

William E. Morgan, of Salisbury, Md., a student at Carnegie Institute of Technology, Pittsburgh, was awarded the first prize of $100, and Thomas F. Moffett, of Saranac Lake, N. Y., a Master Plumber, was awarded the second prize of $50 in an essay contest conducted by Carnegie Tech on "The Use of Vitrified Clay Pipe in Plumbing Systems." The prizes were donated by the Eastern Clay Products Co.

The contest was nation-wide, and the quality of the papers submitted by college students and craftsmen was exceptionally high, according to an announcement. The winner, Mr. Morgan, is a sophomore student in the Plumbing, Heating and Ventilation Courses in the College of Industries. Mr. Moffett, second prize winner, was for nine years a Master Plumber in the Bronx District in New York City.

Professor S. E. Dibble, Head of the Department of Plumbing, Heating, and Ventilation was chairman of the jury of judges, whose other members were: W. J. Woolley, Secretary-Manager, of the National Trade Extension Bureau, Evansville, Ind.; Joseph A. Welden, Welden-Kelly Co., Master Plumbers, Pittsburgh; and John T. Morris, Director of the College of Industries, at Carnegie Institute of Technology.

PAVING BRICK GOVERNORS MEET

Meeting of the Board of Governors of the National Paving Brick Manufacturers' Association will be held at the Cleveland, Ohio, headquarters of the organization on July 11. Prior to this meeting the advisory committee and the educational committee will meet. A full attendance of all groups is anticipated, according to secretary Edward E. Duff.

* * *

TWO MEETINGS OF A. C. S. SCHEDULED

Two important meetings of the American Ceramic Society have been announced by that organization. The annual summer meeting will be held at Toronto, Detroit and neighboring towns, August 8, 9, 10 and 11. The detailed program has not as yet been published but is is known that a number of plants manufacturing ceramic wares will be visited. Interesting entertainment and excursions are also being planned.

In the fall the Society will again have a meeting on the occasion of the National Exposition of Chemical Industries which is scheduled for the week of September 17 in New York City. Just like last year, a day will be set aside, to be known as Ceramic Day. This will be on Wednesday, September 19. A good program of technical interest is being arranged for this day.

* * *

CLAY SEWER PIPE GETS BIG BOOST

Of the greatest interest to manufacturers of sewer pipe is a motion made by Sub-Committee II on Chemical Requirements of Sewer Pipe at the recent meeting of the American Society for Testing Materials. This committee moved that a footnote be added to the first paragraph of the standard specifications for cement-concrete sewer pipe, to read as follows:

"Caution: The purchaser or consumer is cautioned against using cement-concrete pipe where the sewage shows an acid reaction."

The committee, of which Harrison P. Eddy of Metcalfe & Eddy, Consulting Sanitary Engineers, is chairman, has with this footnote given vitrified clay pipe manufacturers a most formidable weapon in the form of an almost invincible sales argument. There are comparatively few sewers which do not show some acid reaction. In the specifications governing clay sewer pipe nothing is said about susceptibility to acids.

* * *

C.B.M.A. Plans Wonderful Trip for 1923 Convention

FIRST GUN in the campaign to organize the members of the brick industry and their friends for the three weeks' tour of the country in connection with the annual convention of the Common Brick Manufacturers' Association of America, which will be held in Los Angeles, Cal., was fired from the Cleveland, Ohio, headquarters of that organization recently, in the form of a folder that tells some of the details and gives the itinerary of the trip. An outstanding feature will be the unusually low cost of the trip, and the fact that the cost as indicated will cover practically every necessary item for the individual traveler.

The itinerary follows:

Leave Chicago, special train, Saturday, 10 p.m., February 2.

Leave Kansas City, special train, Sunday, 12 noon, February 3.

Arrive (first stop) Denver, Monday, 7:30 a.m. Entire day spent in sight seeing, auto trips, and so forth.

Arrive Colorado Springs, Tuesday, 6 a.m. Entire day spent in sight seeing, Manitou, Pike's Peak, Garden of the Gods, and so forth.

Leave Colorado Springs to ride during Wednesday thru the beautiful Royal Gorge.

Arrive Salt Lake City, Thursday, 7:30 a.m. Entire day spent in sight seeing, Mormon Temple Square and Tabernacle, Copper smelter, Salt Lake, and so forth.

Arrive San Francisco, Saturday, 6 a.m. Sight seeing, Golden Gate, Seal Rocks, Chinatown, and so forth.

Leave San Francisco, 2 o'clock p.m.

Arrive Big Trees, 3:30 p.m. A wonderful sight, found nowhere else in the world.

Arrive Santa Barbara, Sunday, 8 a.m. Sight seeing, Spanish Missions, beautiful hotels and residences, and so forth.

Arrive Los Angeles, 3:30 p.m. Headquarters, the New Biltmore Hotel. The entire week will be spent in this wonderful city at convention and in sight seeing. One session a day 10 a.m. to 1 p.m., will be devoted to the convention. Balance of each day for sight seeing. Each session will be of especial interest to brick manufacturers from which they cannot afford to remain away.

Leave Los Angeles, Sunday, February 17, 12 p.m.

Arrive San Diego, Monday, 6 a.m. Entire day for sight seeing, San Diego Harbor, Old Missions, Balboa Park, and so forth.

Arrive Phoenix, Ariz., Tuesday, 8 a.m.

Leave Phoenix by automobile, 10 a.m., over the famous Apache Trail. Stops will be made at the Tonto Cliff Dwellings, Rome of pre-historic peoples; at Fish Creek Canyon; at the famous Roosevelt Dam and then on past celebrated gold and copper mines, to Globe, where trains will be boarded, dinner served and we are again on our way.

Arrive El Paso, Wednesday, 8 a.m. Sight seeing, Scenic Drive, Old Indian Forts, Juarez, Old Mexico, etc.

Arrive San Antonio, Thursday, 10 a.m. Sight seeing, the Alamo, the Old Buckhorn, Old Missions, etc.

Arrive Kansas City, Saturday, February 23, 3:30 a.m.

Arrive Chicago, Saturday, February 23, 5:50 p.m.

The folder gives these additional details:

The special trains will be Pullmans and observation cars. Plenty of dining car service will be provided. There will be entertainment enroute, and the scenery from the train is beautiful over the entire trip, at all seasons. The time of year is most auspicious for this delightful trip, and there will not be a dull moment, from start to finish.

All manufacturers of common brick, regardless of their affiliation with the association, are invited and urged to make this trip and attend the convention. Friends of the manufacturers are also invited and will be welcome. The children will also be welcome, if you care to take them. Definite reservations for space must be made by December 15, 1923, and a partial payment placed by January 1, 1924. Under no conditions will passengers be accepted otherwise.

Persons in districts west of Chicago and Kansas City, can arrange to join trains at designated points enroute, and rates will be made accordingly. Those in extreme South, who do not care to come North to join special trains, can arrange to go direct to Los Angeles and join trains on return trip; and those who join train enroute to Los Angeles, who do not wish to make Southern return trip, can arrange to return separately, or en group, and rates will be made accordingly.

Those wishing to remain in Los Angeles and on the West Coast after date of scheduled return trip of special trains, have that privilege and can return separately or en group at any time during following nine months' period, same ticket good for return trip within that period as if used to return at once on special trains. Stop-overs can also be made at any point returning, by anyone, on same arrangement.

Insulated Kiln Saves 17% in Fuel

Heat Losses Thru Walls and Crown of Kiln Are Tremendous—Thick Walls or Air Space No Insulators — How Insulating Should Be Done

J. H. Kruson, Cr. E.

A. P. Green Fire Brick Co., Mexico, Mo.

ALTHO many of the heat process industries have effected great savings in fuel by the use of insulating material, the ceramic industry, notably the heavy clay products branches, have been rather backward in appreciating this means of reducing fuel costs. This criticism does not hold good of the plants operating tunnel kilns as the tunnel kiln is usually highly insulated and highly efficient in fuel consumption. This is due mainly to the fact that tunnel kilns have been designed by competent engineers who had in mind the most efficient operation of the equipment. Periodic kilns, on the other hand, are built for the most part without the services of an engineer and there have been comparatively few changes in the general design of this type of kiln for a number of years. As a result, insulating materials have not received the attention which they deserve.

25 Per Cent. of Heat Lost

Ceramic engineers have for a long time generally agreed that at least 25 per cent. of the heat generated in burning a kiln is lost by conduction thru and radiation from, the brick work. A considerable amount is also consumed in heating the large volume of brick work in the kiln walls, crowns, flues and the earth on which the kiln is built. The heat loss sustained in this way is undoubtedly more than 25 per cent. in the average plant.

Air Space of Little Value

There are a number of plants in which attempts have been made to reduce heat losses. One method tried was the "dead air space" between the furnace lining and the outside wall. This method of insulation has been used successfully in low temperature work but at the temperatures employed in burning brick, air is no insulation because of the fact that air currents are established which conduct the heat to the outer wall faster than even the densest refractory material. The fallacy of the theory that a continuous air space is an effective means of retarding heat flow thru high temperature walls is conclusively disproved by Ray and Kreisinger in Bureau of Mines Bulletin No. 8, 1912, entitled "The Flow of Heat Thru Furnace Walls."

Hollow tile and double crown with an air space between have also been used but none of these methods has been found to be effective as here, too, the air space is highly conductive.

Thick Walls Save Little Heat

Probably the first method ever tried for preventing excessive radiation losses, has been the building of very thick walls. Walls from four to six feet in thickness have been constructed and while they eliminate any great loss of heat from radiation during the burn, the great mass of brickwork which must be heated assimilates nearly as much heat as would be lost by conduction thru a thinner wall. Furthermore, the thick walls are expensive to build and occupy needed space.

As is generally known heat may be transmitted in three ways; namely, conduction, radiation and convection. Of these three, conduction is the most important factor to be considered when designing a kiln. Many insulating methods have failed but it can readily be seen that if a material of relatively low conductivity could be installed as a component of the wall, this would be an effective method of retarding the flow of heat thru the masonry. Kiln insulation makes rather exceptional demands on the insulating material and it has only been during the last ten years or so that a suitable material for this purpose has been on the market. Briefly, the ideal insulation for this purpose should have the following properties:

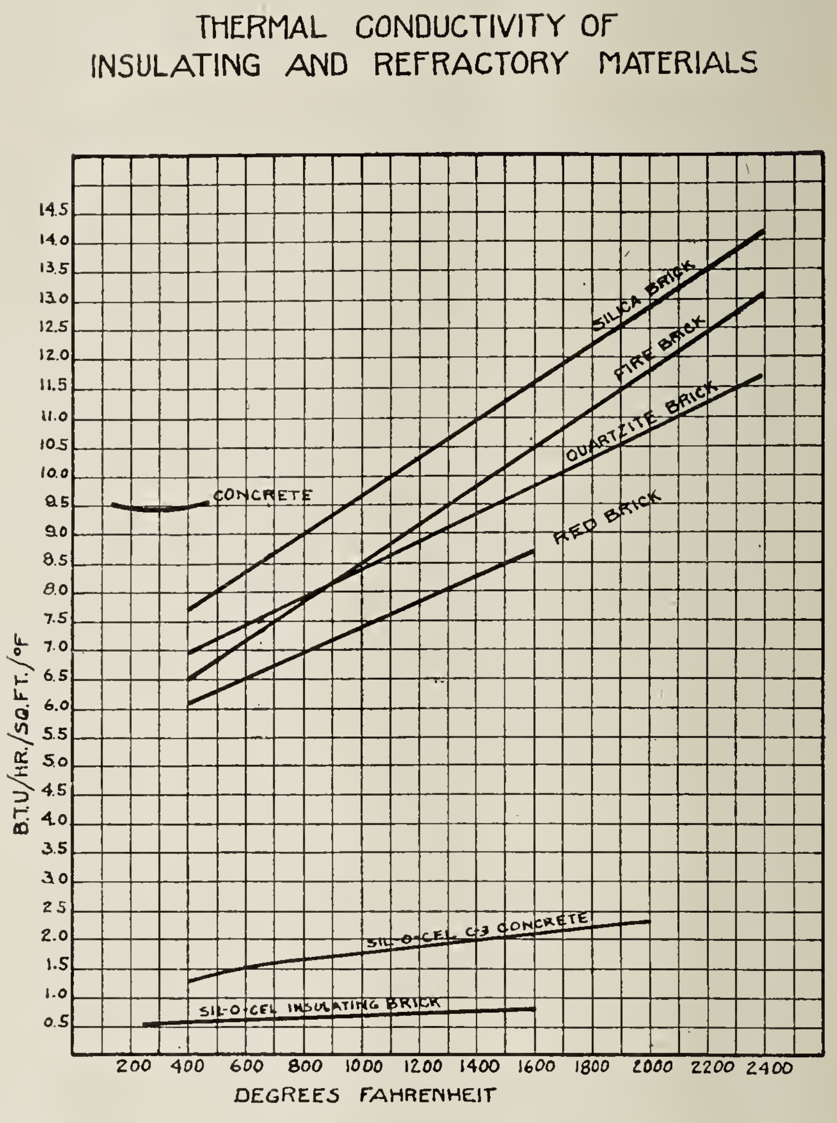


Figure 1. Relative Conductivity of Various Refractories and Sil-O-Cel Insulating Brick.

1. High heat insulating value.
2. Sufficiently refractory so as not to change form or lose its efficiency when subjected to high temperatures.
3. Sufficient mechanical strength to resist wall strains due to expansion and contraction of the brick work with changing temperatures.
4. Approximately the same coefficient of expansion as the brick work.
5. Light weight (desirable for crown insulation).
6. Convenient form.

Nature has provided large deposits of material having remarkable non-conducting properties. This material is

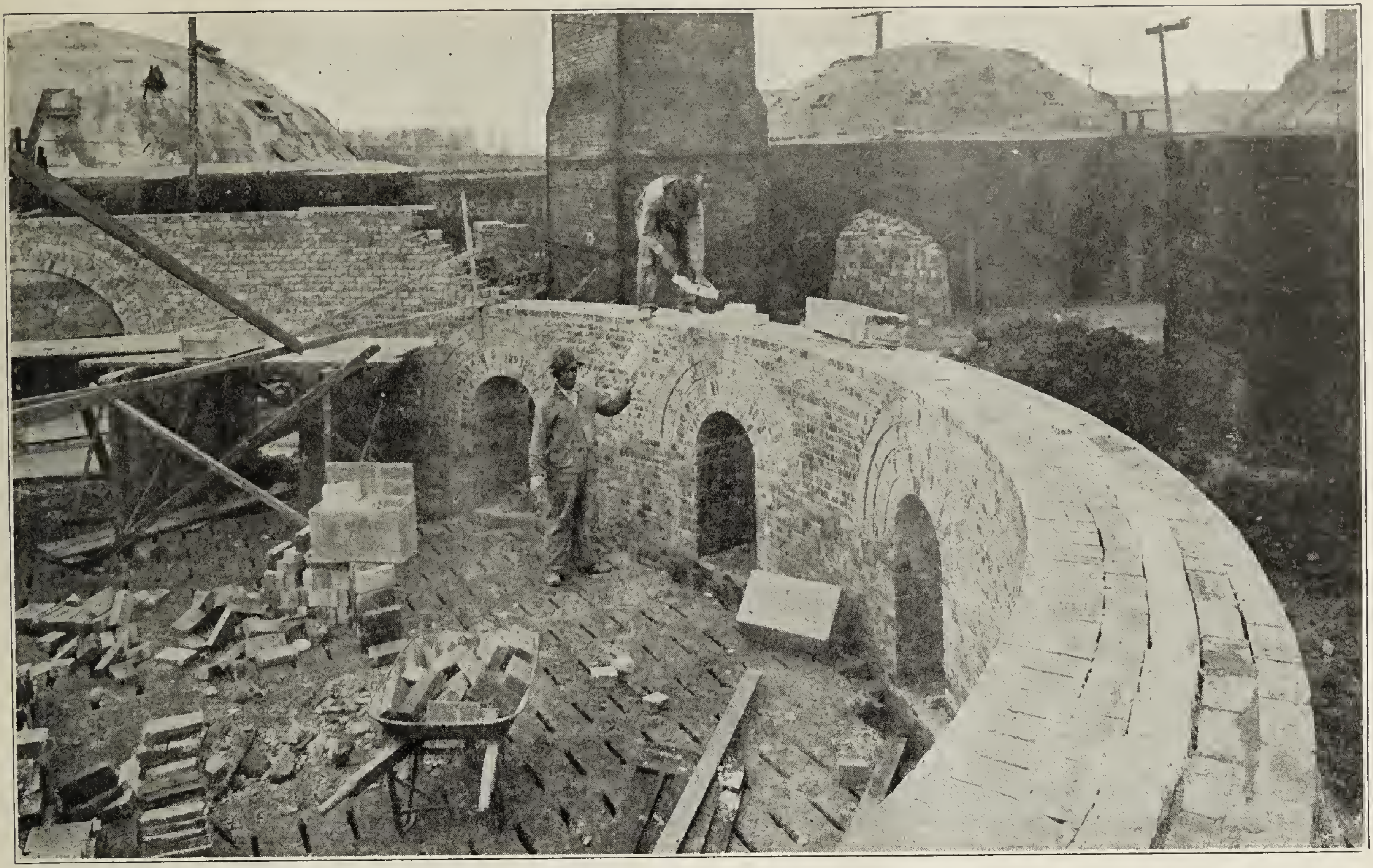


Figure 2. Kiln Wall Being Built with a Layer of Insulating Brick in the Center. This Kiln Was Built to Burn Refractories and Its Construction Therefore Is More Elaborate Than Would Be Necessary for Brick or Tile.

known as Kieselguhr or Infusorial Earth and has been used for insulating purposes for a great number of years in Europe and especially in Germany, where the name "Kieselguhr" originated. An extensive deposit of this material, possessing the requirements enumerated above to a large degree, occurs in this country near Lompoc, Cal. This material is generally known in the United States under the name of "Celite" and various commercial forms of the product are produced under the trade name of "Sil-O-Cel."

In composition it is practically pure silica which accounts for its ability to stand high temperatures—the melting point being 2,930 deg. F., according to the Bureau of Standards. It occurs in stratified formation and the natural Sil-O-Cel brick are cut parallel to the strata which gives them an exceptionally high crushing strength for an insulating material, running over 400 pounds per square inch.

These brick weigh only 28 to 30 pounds per cubic foot and their light weight makes them very desirable for crown construction.

Insulating Value Due to Tiny Air Cells

Kieselguhr or Diatomaeous earth, as it is sometimes called, is composed of infinitesimal air-cells left by decayed diatoms or infusoria. These tiny air cells do not conduct heat as do larger areas in which air currents are established at high temperature. From the available data on the heat conductivity of commercial refractories it has been found that one inch of the natural "Sil-O-Cel" brick will deflect or hold back as much heat as 12 inches of ordinary fire clay brick. In Figure 1 is shown the relative conductivity of various refractories and Sil-O-Cel insulating brick.

Method of Insulating Kilns

Figures 2 and 3 show a kiln under construction in which insulating brick are being used. The wall of this kiln is only 27 inches thick and is composed of a 13½ inch fire brick lining; 4½ inches of Sil-O-Cel insulating brick and 9 inches of fire brick on the outside. Common brick would of course be satisfactory for the outer wall.

The particular kiln under discussion is used for the burning of refractories. In the case of kilns which are burned at temperatures of less than 2,100 or 2,200 deg. F., a 22½ inch wall with 9 inches of refractory brick on the inside of the insulation should be amply strong and at the same time be very economical of fuel consumption.

In this particular case the wall was bonded with metal wall ties 12 inches long, extending across the insulation and approximately 4 inches into the other brick on either side. Several other companies have bonded with fire brick headers where insulating brick were used and in no case—to the writer's knowledge—has any trouble resulted using either method. The insulation in the walls extends from the ground level to within about 18 inches of the top of the wall where special refractory tile were used for the crown seat.

Crown Left Bare for Two Burns

In this particular kiln the insulating brick were not laid in the crown until after the second burn. This was done because the crown will usually settle from four to six inches during the first two burns. A much tighter platting was therefore secured. The crown was covered with Sil-O-Cel brick laid flat to give 2½ inches of insulation and the Sil-O-Cel in turn covered with split fire-brick 1¼ inches thick.

Crown Should Be Waterproofed

While these brick are not permanently affected by moisture, their insulating value is reduced by the presence of moisture, and to insure a really first class job the crown should be covered with a waterproofing compound. The kiln under discussion was covered with about one-quarter inch of Celcote which is a waterproofing material with a

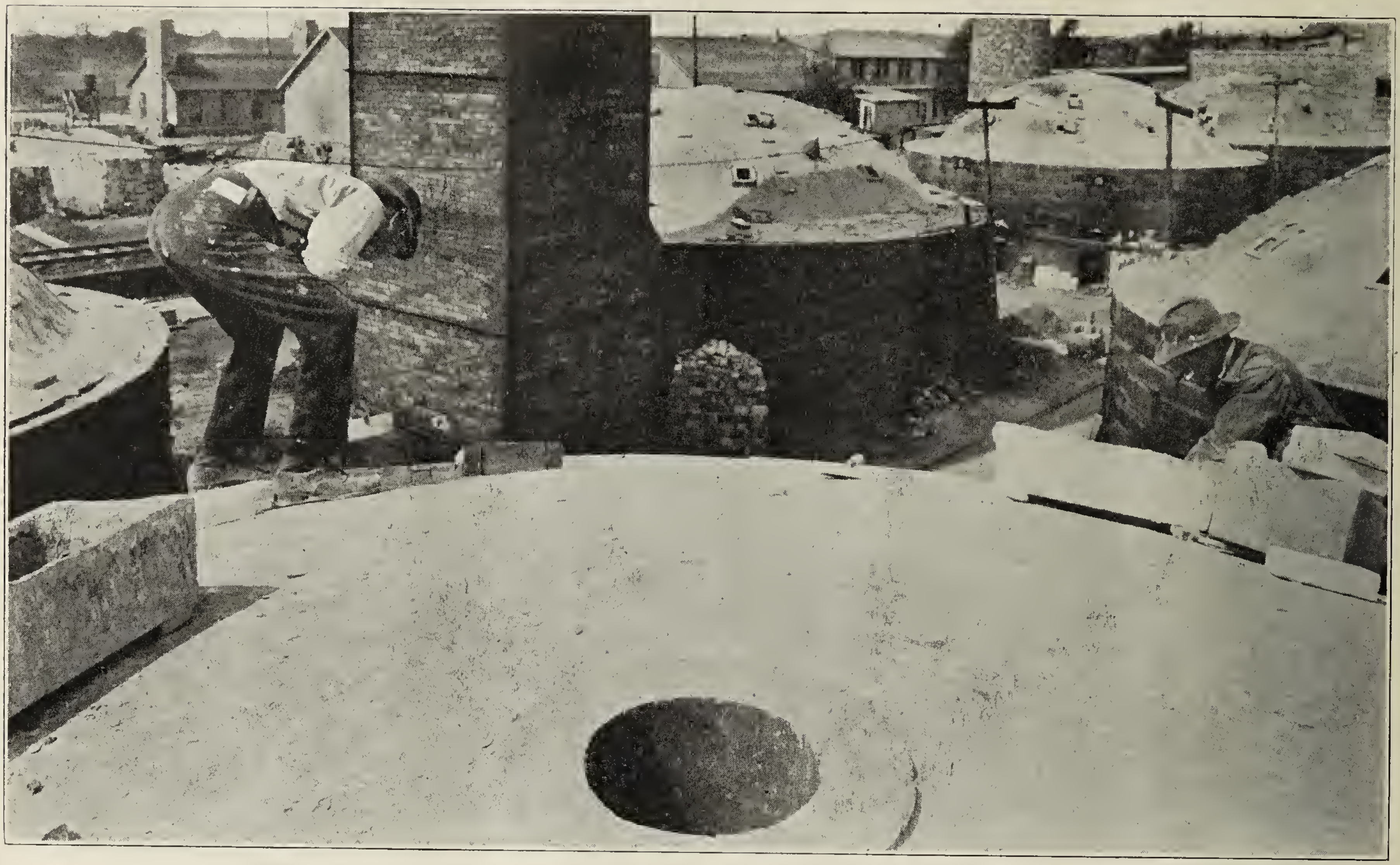


Figure 3. Laying Insulating Brick in the Crown. The Brick Are Laid Flat, Providing 2½ Inches of Insulation.

bitumastic-base fused with non-drying oils and especially prepared to stand the temperatures it is subjected to on kiln crowns. The manufacturers do not recommend this, however, unless the crown is insulated.

The volume of heat absorbed by the masonry work supporting the kiln floor and walls, the earth or artificial bottom on which the foundation is built and the flues from the kiln to the stack, is generally overlooked and

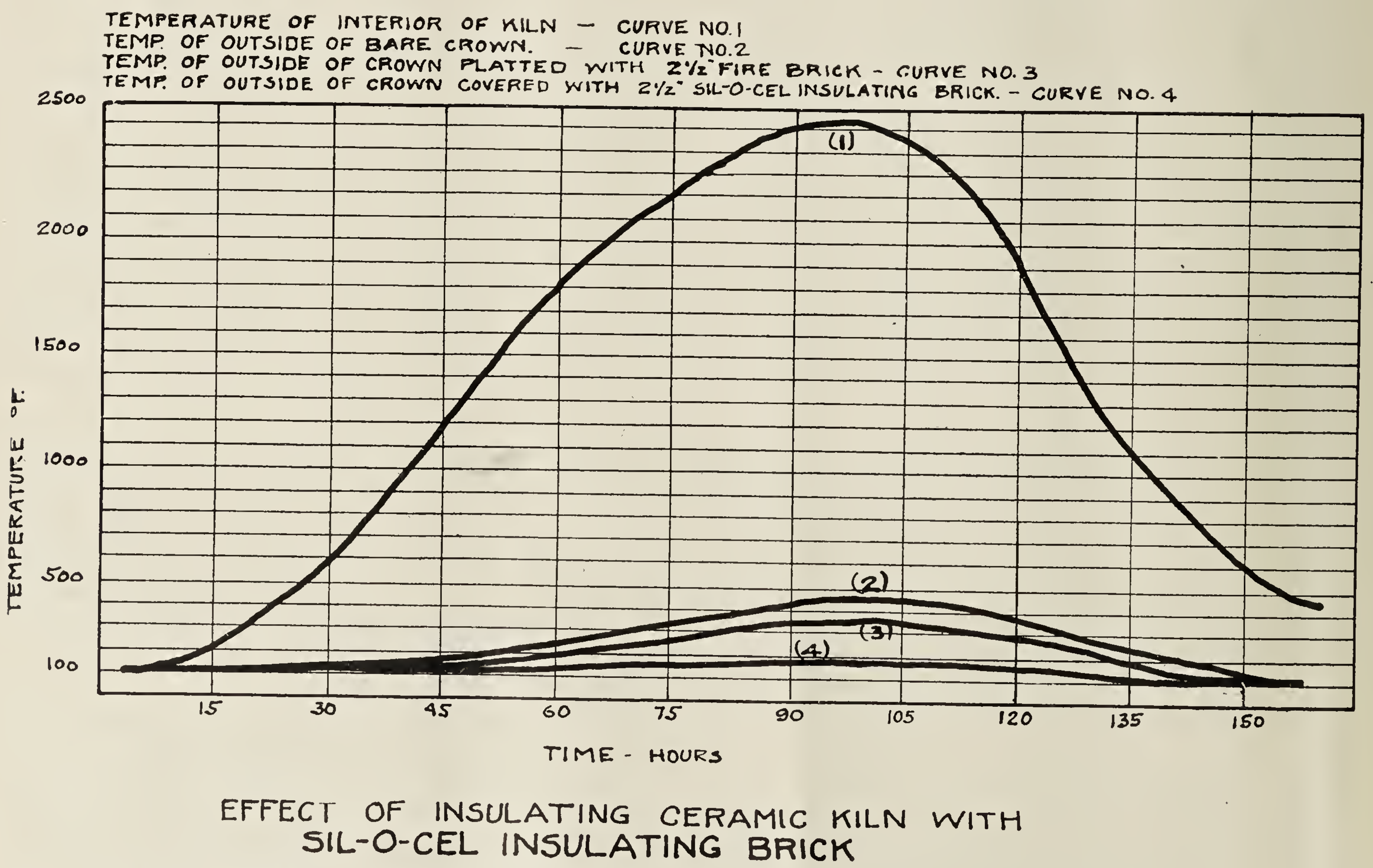


Figure 4. Comparison of Crown Temperatures of Kiln Showing Amount of Heat Retained by Insulating.

seldom gets any attention or consideration. Without question, a great deal of heat is lost here, due both to the high conductivity and high specific heat of the material on and of which the kiln floor is built. The stack also is a source of great heat loss and this is evident when it is realized that the temperature of the gases in the stack flue, a distance of three to five feet from the kiln average from 1,100 to 1,500 deg. F., depending on temperatures reached in the kiln.

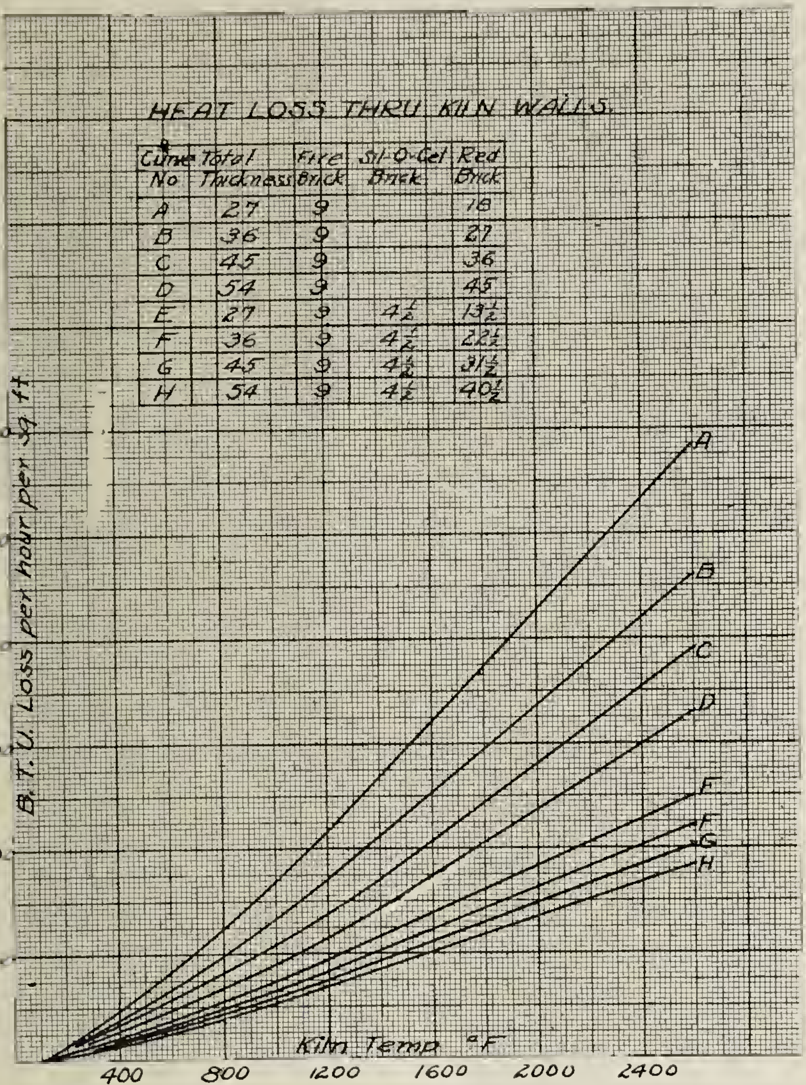


Figure 5. Heat Loss Thru Kiln Walls. Each Curve Represents a Different Kiln.

Insulating materials have made marked savings when used in kiln structure above the ground and should serve equally well when used to eliminate excessive flow of heat in the ground and foundations. There would undoubtedly be other advantages besides the amount of heat units saved from soaking into the earth:

(a) The time generally required to bring the ware in the bottom of the kiln up to a finishing temperature, should be considerably shortened.

(b) The draft should be improved during the early stages of the burn as the stack temperature would be increased by the heat units which formerly had lodged in the kiln bottom or foundation.

Insulating Material for Bases

Insulating brick are being put on the market which are claimed to have sufficient mechanical strength for this purpose. They are composed entirely of Kieselguhr and are calcined, eliminating the possibility of any shrinkage in service and at the same time increasing the strength. These brick are not quite as high in insulating value as the natural Sil-O-Cel brick.

A granular material which can be mixed and molded into shape like concrete is also furnished for this purpose and in fact has been used under similar conditions for a number of years in other industries.

At the present time there are comparatively few thoroly insulated kilns, yet many of these have been in service long enough to determine whether or not insulation may be considered a paying investment. The larger portion of the heat loss thru uninsulated kilns is naturally sustained thru the crowns due to the high temperature and relatively thin crown wall construction. Manufacturers that have used this material for even partial insulation, however, have no doubt that complete insulation including walls, crown and bases, would be a highly paying investment.

Before this paper was written investigations were made and opinions received from other users of insulating materials in kilns. Absolutely definite figures regarding fuel savings are very difficult to obtain but practically everyone who was requested for information estimated that fuel savings by insulation of walls and crowns ranged from 15 to 25 per cent., while for crown insulation only savings from 10 per cent. to 15 per cent. were reported. These figures were reported by approximately 25 plants using this material.

Saving Averages 17 Per Cent.

The kiln shown in Figures 2 and 3 is burning on an average of 17 per cent. less fuel than the other kilns on the same yard. However, it has a few small changes in design which might be responsible for a part of the savings.

Exterior Crown Temperature Lower

The value of insulating kilns is obvious, regardless whether or not fuel consumption records are kept. In the kiln under discussion for instance, the temperature of the exterior of the crown was found to be over 100 deg. F. lower than crowns platted with 2½ inches of fire brick. The comparison in crown temperatures is indicated in Figure 4. This alone is conclusive proof of the vast amount of heat that is being retained in the kiln for effective work.

Furthermore, it was found after several burns in this kiln that the total furnace area could be reduced about 10 per cent. and there would still be ample capacity to produce heat as fast as it could be absorbed by the ware.

The burning time has also been considerably shortened and these are all indisputable proofs of the value of insulating materials.

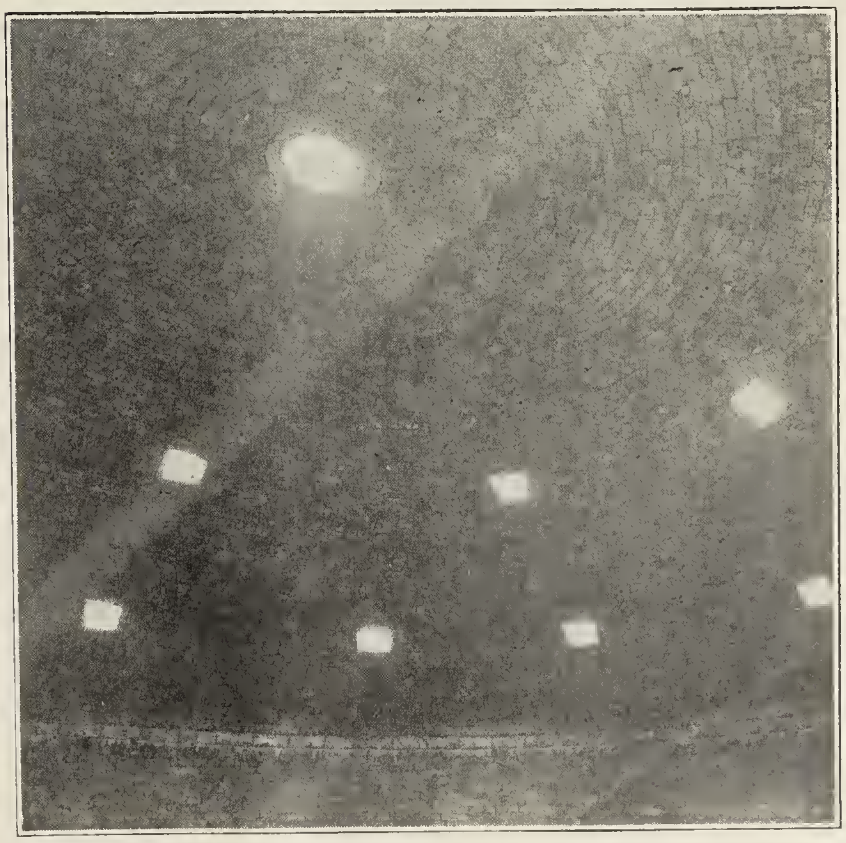


Figure 6. Interior of Kiln Shown in Figure 1 After 12 Burns Had Been Completed. The Brick Are in Good Condition.

In one or two isolated cases, insulated kiln crowns have collapsed and because of these unsuccessful attempts, many manufacturers have become prejudiced. Briefly, the life of a crown depends upon:

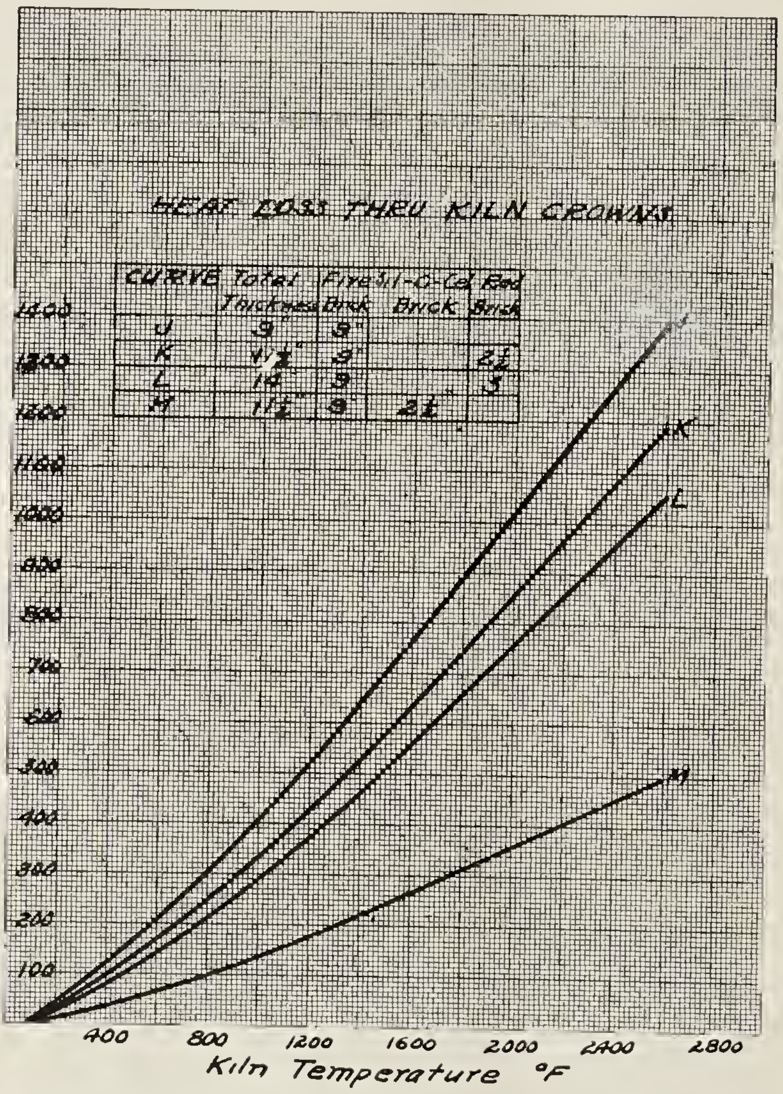
1. Design. (The height of the crown from the spring line to the top inside, should be approximately one-fourth the diameter of a round kiln, or one-third the width of a rectangular kiln.)
2. Material and construction.
3. Banding at Crown Seat.

The crown is exposed to the highest temperatures and must be carefully built of a good quality refractory brick which is capable of carrying the load imposed on it without losing its form.

Use Good Refractory in Crown

In uninsulated kilns the crown brick free themselves of the heat readily and seldom approach a state of vitrification. This makes the brick less liable to fail.

The insulated crown must be built of a refractory product, the failing point of which under a load is reached at a considerably higher temperature than is required or will be reached in burning the kiln of ware. Where a good refractory is used there is no danger of insulating crowns. Some crowns insulated with Sil-O-Cel brick as long as five or six years ago are still in good condition. The insulating brick, being light in weight, allow the crown free action in adjusting itself as expansion and contraction occurs.



CURVE	Total Thickness	Fire Brick	Sil-O-Cel Brick	Red Brick
J	9"	9"		
K	11½"	9"		2½
L	14"	9		5
M	11½"	9	2½	

Figure 7. Loss of Heat Thru Various Types of Kiln Crowns.

Crown Good After Twelve Burns

Figure 6 shows the interior of the crown of the kiln in Figure 1, after it was burned 12 times. The kiln is in excellent condition now, after being in service for about a year, and is showing no signs of failure. In fact, it is expected that this crown will last longer than crowns platted with fire brick as it carries a considerably lighter load. A high grade dry pressed brick was used in the crown.

Because the initial cost of insulating brick is somewhat higher than a high grade fire brick, it has been considered by some as too expensive a material to use in the kilns.

In covering the crown, there would be the extra expense of laying the brick and perhaps a little extra care in putting on a good platting course over the insulation and then waterproofing. The cost of insulating kilns, however, is repaid many times over during the life of a kiln. Take for instance a kiln using 60 tons of $5 coal per burn. A saving of 12 per cent. due to crown insulation is a conservative estimate and this would amount to $36 per burn in this case.

Thinner Walls Made Possible

In addition to the fuel savings which would be realized thru the installation of the side walls, a decided saving would result in the number of common brick used, labor and yard room or permit the building of a larger kiln (inside diameter). The average uninsulated kiln walls are three to four feet in thickness and in a 30 foot round down-draft kiln, comparing the saving in the construction of a three foot wall, with a 22½ inch wall, there would be a saving of approximately 32,000 common brick, plus the cost of laying. In the 27 inch wall the saving would be 24,000 common brick, plus the cost of laying (wickets and fire pockets not considered in these calculations).

This saving in material and labor would go a long way toward making up the difference in first cost between an uninsulated and an insulated kiln, disregarding the primary object of saving fuel and other advantages, such as a faster burn time, a more even heat distribution and more yard room.

Improved Quality of Ware

We have found that the quality of the ware in insulated kilns is very noticeably improved. A much more uniform distribution of heat is made possible, eliminating the necessity of forcing the fires and overheating the hotter portions of the kiln to bring the cooler parts up to the desired temperature. The outer walls are protected against rapid temperature changes, reducing the danger of cracks developing with resultant air infiltration. It is probable that these other incidental advantages are in the aggregate of at least equal importance to the savings in fuel which can be effected.

Besides being used in its natural state Kieselguhr is also ground into a powder which has approximately the same insulating value as the brick. It is also made into calcined brick and the granular material previously mentioned for base insulation.

An underburned silica brick has considerable insulating value, yet when properly burned its conductivity is somewhat higher than that of fire clay brick. The physical properties of silica brick are such that they cannot be used in a periodic kiln lining or crown.

Insulating brick of an inferior quality can be made by mixing sawdust, coal slack or grain with the clay before burning.

Large Savings Possible

During the past year or so rapid strides have been made in the insulation of periodic kilns and brick manufacturers are at last beginning to realize that excessive heat loss in periodic kilns is an unnecessary evil and that to keep up with improvements in other plants advantage should be taken of every legitimate means of reducing production costs.

All users of insulating material for kilns reported that they considered it a paying investment and the average estimated saving from plant to plant is about 15 per cent. On a single yard, using 60 tons of $5 coal per day, the saving would be $16,425 per year. This indicates the enormous possibilities for savings thruout the entire clay burning industry which consumes in the neighborhood of 15,000,000 tons of coal per year.

The Weak Spots in Concrete

Symposium of Authorities at Meeting of American Society for Testing Materials Brings Out Fact That There Are Many Uses for Which Concrete Is Not Suited

THAT PORTLAND CEMENT as it is now manufactured is not a panacea for all the ills of construction, was definitely brought out in the symposium on the subject of concrete given at the recent meeting of the American Society for Testing Materials. This symposium was a discussion of the requirements of concrete to meet the many varieties of service conditions and was given in the hope of gaining valuable information from the behavior of actual structures. It is not the purpose of Brick and Clay Record in presenting some of the weaknesses of concrete brought out during the discussion to malign this most valuable structural material, but merely to point out to manufacturers of clay products some of the uses for which concrete at present is not as well fitted as burned clay.

Concrete Has Limitations

Thru intensive research work and a constant desire to better their product, manufacturers of Portland cement have made wonderful strides toward producing a good material. Yet, since concrete is an artificial chemical combination, it must be apparent that its use is bounded by certain restrictions and as F. C. Wight, Managing Editor of Engineering News-Record, says in introducing the symposium on concrete, "Only those blinded by prejudice can fail to admit that a great deal of existing concrete falls short of the expectations of its designers in appearance and in structure. Most of this concrete was satisfactory when the forms were first removed. For some reason or other there has been change with the passing of time—not change due to unexpected or undue load or wear, but change due to the natural exposure of the elements and the natural reactions in the concrete itself."

Cement Often to Blame for Failures

P. H. Bates, Chemist of the U. S. Bureau of Standards, Washington, places much of the blame for many failures of concrete on faulty materials, especially cement. Mr. Bates says: "We should like to call attention to the need of the study of volume in concrete when subjected to the atmospheric conditions defining this class. It has been our duty to examine the veneering of a large number of steel and concrete frame structures and we have been surprised at the relatively large numbers of failures of the veneer on the concrete than on the steel structures. Architectural terra cotta, stone, and brick veneer show failures of a type that lead almost conclusively to the deduction that the concrete by contracting has induced strains in the veneer that have crushed it, especially when setting of the latter has been faulty due to the lack of fully embedding the individual units in the mortar."

These occurrences, Mr. Bates attributes to the cement used in making the concrete. These observations should be of value to road builders who advocate the use of cement fillers for brick pavements. The same difficulties are experienced in this type of road as are outlined in the previous remarks.

Behavior of Concrete in Water

Much consolation and ammunition for the drain tile and sewer pipe manufacturer, who is offering his material for sale in competition with cement products will be found in the following excerpt from Mr. Bates' statement: "Some time must be devoted to concrete in foundations, tunnel linings and other cases where it may be subjected to percolating water. Briefly, concrete thru which water constantly percolates is doomed, but only locally at that point where the percolation takes place. We can deduce this from the conditions in any large limestone section of the country, where in many cases streams of water, once on the surface, are hundreds of feet underground. . . . Hydrated cement, the matrix of concrete, is just as soluble as limestone, in fact, it is more soluble. It has been found by sad experience that water must be kept out of concrete and it is being done on all large jobs. With the prevention of the water percolating thru the concrete the latter is giving adequate service, but cement in itself cannot be so changed as to make the concrete impermeable. Here is a condition which requires the joint proper use of all the ingredients of concrete, cement, aggregate and water, and when so used an impermeable concrete can be obtained."

Why Concrete Drain Tile Are Dangerous

Partly substantiating the above statement of Mr. Bates, Arthur P. Davis, Director of the U. S. Reclamation Service, Washington, says: "Percolation of alkaline water into or thru thin sections of concrete produces disintegration that has not been noticed in large masses. Disintegration due to freezing or to the action of combustion gases or acids in liquid form, is superficial in character and not characteristic of large masses of concrete." This seems to indicate that, while concrete is entirely serviceable for foundations, buttresses, walls, and the like, its use underground in the form of drain tile or sewer pipe is a precarious proposition, to say the least.

Sulphate Disintegration of Concrete

P. J. Freeman, Engineer of Tests, Pittsburgh Testing Laboratory, also contributed to the symposium, with a paper on "Behavior of Concrete Exposed to Atmospheric Conditions." In his discussion, Mr. Freeman has included the summary of Charles A. Newhall's investigation of concrete in railway tunnels. Mr. Newhall is a member of the Pacific Northwest Society of Engineers, Seattle. In his study of the Cascade Tunnel, he makes some interesting remarks on sulphate disintegration.

"In the Cascade Tunnel two distinct types of disintegration were noted. In one type the concrete softened and became mushy without swelling or the formation of white mud. This disintegration is due to the actual solution and removal of the cement by water flowing over and thru an originally porous concrete.

"The second type, called the "Sulphate Disintegration" to distinguish it from the first, is prevalent in the Cascade Tunnel. It is always accompanied by swelling of the concrete and the formation of a white mud abnormally high in sulphur content.

What Causes Sulphate Disintegration

"This 'Sulphate Disintegration' is the result of a reaction between the sulphurous fumes from the locomotive fuels and the cement of the concrete. In this reaction gypsum (hydrated calcium sulphate) is formed. Also the cement is replaced by or changed into soft white substance, this change being accompanied by a volume increase of 716 per cent.

"Moisture is essential to the reaction. It does not start in dry concrete. It stops when the concrete dries out.

"Disintegration starts in porous spots in the concrete or in cracks and fissures that have formed as a result of stresses due to expansion and contraction, or possibly to earth movements.

"The 'Sulphate Disintegration' once started, progresses very slowly, requiring approximately ten years before it advances far enough to become apparent to the eye."

Transverse Cracks Inevitable in Concrete Roads

Concrete in roads also came in for a share of attention. This subject was handled by A. T. Goldbeck, chief, Division of Tests, U. S. Bureau of Public Roads. Mr. Goldbeck says: "Perhaps the most common defect noticeable in the concrete pavement is that of cracking, the most frequent cracks being transverse cracks across the width of the pavement. Longitudinal cracks parallel with the edges of the pavement, diagonal cracks and corner cracking also occur.

"(a) Transverse Cracks.—It seems inevitable that transverse cracks must form in concrete pavements, because concrete will not stretch to the amount made necessary by shrinkage produced thru drying out of moisture and by decrease in temperature. This becomes evident when we realize that concrete shrinks approximately 0.0004 to 0.0005 inch per inch of length due to drying out of moisture and approximately 0.0005 inch per inch of length due to 100 deg. F. fall in temperature, a possibility of 0.001 inch shrinkage per inch of length due to these combined causes. This is equivalent to 0.1 foot per 100 feet with a combination of these extreme conditions.

Longitudinal Cracking

"(b) Longitudinal Cracking.—Longitudinal cracks occur, in general, due to non-uniform support offered by the subgrade. In those parts of the country where frost penetrates to a considerable depth, longitudinal cracking is quite prevalent. This is due, perhaps, to the unequal depth of frost penetration at the side of the road as compared with the center."

The behavior of concrete exposed to alkaline conditions has been the subject of many a hot debate between manufacturers of sewer pipe and drain tile and manufacturers of concrete products. A strong case for clay products has been made by G. M. Williams, Professor of Civil Engineering, University of Saskatchewan. In summarizing the field of investigation made by the Bureau of Standards in 1913, Mr. Williams brings out the following six points:

"1. The best quality of mortar or concrete may be disintegrated in sulphate soils and waters. The deterioration in chloride or carbonate waters appears to be very slow or almost entirely lacking.

Frost Accelerates Disintegration

"2. Rapidity of disintegration is proportional to the sulphate content of the water.

"3. Frost action appears to accelerate disintegration in sulphate waters.

"4. Carbonizing of the lime at and near the outer surface of a structure will not prevent disintegration. While this carbonized coat may be immune or very slowly affected, it is permeable and the uncarbonized portions within may be attached and result in the shelling off of the carbonized surface.

"5. Tar protective coatings are not permanent.

"6. Concentrations of alkali waters may vary as much as several hundred per cent. in distances only a few feet apart."

Effect of Alkaline Soils

Mr. Williams summed up the status of the use of concrete in alkaline soils as follows:

"1. In many districts of the Western States and Canada there are areas where the salt content of the soil is high and concrete cannot be used with assurance of success.

"2. Study of field conditions indicates that deterioration of concrete structures is almost entirely confined to regions where the sulphate type predominates. Good quality concrete is apparently being successfully used in chloride and carbonate soils.

"3. Rapidity of disintegration varies directly as the sulphate concentration.

"4. Where concentrations are permanently low, good quality concrete appears to have a life which fully justifies its use.

Salt Concentrations Variable

"5. Concentration of salt in ground water may be extremely variable at points short distances apart. There also appear to be seasonal or yearly variations in some districts.

"6. Concrete of high quality is most resistant to action. High quality for exposure to alkaline conditions is measured by impermeability or resistance to passage of water thru the mass under pressure. The one big factor necessary to secure low permeability is high cement content, so that high compressive strength can generally be used as a criterion of low permeability. Consistency, within practical working limits, and gradation of aggregate are secondary factors in obtaining a concrete of low permeability.

"7. Where alkali conditions are bad, the factor of safety against failure can be greatly increased by employing proper drainage precautions.

"8. The employment of a membrane waterproofing may prevent action for a time at least, but such a method is not practicable under all conditions.

Sulphates Attack Portland Cement

"9. Portland cement, as now constituted, is inherently subjected to attack by sulphates in the soil and ground water and the practical and final settlement of the alkali-concrete problem is dependent upon modification of, or the discovery of some material which may be added to portland cement to make it immune to such action."

In conclusion, Brick and Clay Record desires to quote P. H. Bates, Chemist of the U. S. Bureau of Standards who, in his part of the symposium says, "Are we not fundamentally wrong in saying or hoping the cement products be even approximately permanent?" And then, towards the end of his talk, Mr. Bates suggests "another slight variation of a well-known slogan as a thought to have before it the next few years, 'Concrete for Study'."

Unquestionably Mr. Bates' suggestion is a good one and were it followed it would tend to put more confidence into that much-advertised slogan, "Concrete for Permanence."

The symposium which is here excerpted has been printed in pamphlet form and may be obtained from the American Society for Testing Materials, 1315 Spruce Street, Philadelphia, Pa.

The booklet should be in every clay products manufacturer's hands because it contains invaluable information about a very active competitor.

Ask for Preprint 37 "Symposium; What Properties of and Methods of Making Concrete Require Further Investigation."

BRICKLAYER SCHOOLS MOVE PROGRESSES

Opinions from members of the bricklayers apprentice school committee, which was appointed by Ralph P. Stoddard, secretary-manager, the Common Brick Manufacturers' Association of America following the conference of interested institutions at Cleveland some weeks ago, are beginning to come back to association headquarters in Cleveland. These opinions are based upon the findings in the report which was sent to committee members. In the main, according to Charles A. Bowen, assistant to the president of the association, the members concur with the suggestions contained in the original report. Some members are making additional suggestions. As soon as returns are received from all the members, the report will be recompiled, and the move started toward the establishment of the schools, as was the original thought of the congress held on June 5. The slight modifications will in no wise affect the program for the creation of more bricklayers. In a few instances some members to the committee may be unable to serve, and others will be appointed in their places.

* * *

WISCONSIN EXPECTS LOWER RATES

The Wisconsin Clay Manufacturers' Association is awaiting the decision of the Wisconsin Railroad Commission on the rehearing granted carriers following the establishment last fall of a sweeping cut in intrastate freight rates on shipments of brick and articles taking "brick distance rates" on eight principal railroads in the state. The cuts announced in fall ranged from 28 per cent. on distances under 25 miles up to about ten per cent. on shipments for longer hauls of from 75 to 150 miles. The rates were progressive for every five miles of the first 100 miles, and for each ten miles thereafter up to 400 miles, the longest distance a commodity can be shipped within the state. The new rates were to become effective within 19 days of the order. This basis of rates, however, never was established by the carriers, they having requested a rehearing which was granted by the commission. Such rehearing has now been held and it is understood that a distance tariff schedule will be established in the very near future substantially the same as that promulgated by the commission last fall. The new rates will be a substantial reduction from the present rates. The commission in its previous decision said that it was of the opinion that for movements of brick between the eight railroads affected single line rates should apply.

* * *

Anthracite Operators Proposal Seeks to End Strikes

IN AN EFFORT to force labor and its employers in the anthracite coal industry to settle all disagreements by arbitration, the General Policies Committee of Anthracite Operators has submitted a proposal to the United States Coal Commission which gives the public an opportunity to sue the unions and to seek compensation from the unions whenever an unlawful strike takes place. The anthracite operators have made this proposal in order that there may be created a weapon to force unions to abide by the decisions of the Board of Conciliation, a board which was established on agreement of both parties. In this connection the operators say: "The keynote of all labor difficulties in the anthracite industry is the lack of union responsibility toward its agreements, the public, the operators, and the rank and file of miners. The leader who works harm is answerable to no one. A new force must be interjected to bring responsibility to life for the redemption of this situation—to secure the observance of industrial order as against the present menace of disorder.

To Stop Strikes

"The logical plan for the avoidance of stoppages and paralysis in matters of public importance is to provide that in a public emergency all differences must be settled by disinterested agencies. This means compulsory arbitration or its equivalent, only as a last resort."

"Akin to compulsory arbitration is the alternative proposal that strikes and lockouts should be unlawful except where an offer of arbitration has been made to, and rejected by, the party against whom demands are pending."

Keep Anthracite and Bituminous Separate

Other suggestions of the operators call for compulsory investigation with prohibition of strikes and lockouts while the investigation is in progress. The operators believe that all strikes should be unlawful except when authorized by a vote of two-thirds of all the employes taken by secret ballot at each colliery, under the supervision of some specified public official. It is recommended that the anthracite industry be kept independent of the bituminous industry and that wage agreements of the two industries be made to expire in different years. It is recommended that it should be unlawful to organize or maintain a strike in both industries at the same time.

The operators believe that "a contract for a term of years, subject to wage adjustments on April 1 of any year after compliance with appropriate provisions relative to notice as to proposed changes, conferences, negotiations, and so forth, should be made. The period of such notice should be sufficient to allay temporary excitement and to encourage a cool and deliberate judgment."

Unlawful Strikes and Lockouts

Strikes and lockouts, it is recommended, should be regarded unlawful if they are in conflict with agreement or with the existing machinery composed of grievance committees, the Board of Conciliation and the Umpire; if they are instituted to compel recognition of union committees or representatives not elected by secret ballot at the collieries; if they are for purposes contrary to the established principles of the 1903 award relating to discrimination or limitation of output.

The operators stated that since in the 20 years of its existence the union has been unable to stop or avoid outlaw strikes instituted by individual locals, a remedy must be supplied by the Government in behalf of the public. They propose, therefore, that where the district leaders are unable to control the local union or show disinclination to do so, the Government be given power to exact indemnity from the district to the extent of $1 per day per man for every day each union man is engaged in such strike. The suggestion of the operators also provides that any public spirited citizen may institute a suit against the district union for indemnity. The recommendation further provides that the district union in the event that it is obliged to pay damages, may at its discretion reimburse itself by collecting all or any part of such damages from the local union having jurisdiction of the men engaged in such unlawful strike.

What Anthracite Industry Needs

Concluding its arguments in support of the proposals outlined here, the operators say, "All that is needed in the anthracite industry is some adequate means,

"1. To enforce agreements and obedience to the Board of Conciliation and Umpire.

"2. To decide issues on the termination of agreement when the parties are unable to agree, or at least to discourage conflicts in such emergencies."

* * *

WILL BUILD $10,000 KILN

The Wheeling Tile Co., of Wheeling, W. Va., will erect a $10,000 kiln, it is said. It will be 100 by 60 feet.

When You Electrify Your Plant

An Interview with Clarence Hendershot, Superintendent, Cleveland (Ohio) Brick & Clay Co. Wherein He Sets Forth Some of the Benefits Accruing to His Plant from Electrification and the Things to Be Considered When Changing Your Power Plant

"WHEN IT IS POSSIBLE to cut one's power costs in half without jeopardizing, in any way, his uniform production—indeed **increasing** that production from 25 to 40 per cent.—you would think that one should do it, wouldn't you?

"Well, that's just what I thought. Of course I did not know these things at the time we made the change. But I had plenty of time to think about it, for it was during the summer of 1918 that the transition was made and just at the time when the government was supervising the distribution of coal to the extent that we were able to obtain no more than 50 per cent. of our requirements. This forced us to shut down six months in the year, affording me an abundance of time and opportunity for cogitation, as you may guess.

What the Company Was Up Against

"It was just at this time, also, that our old steam plant was giving us trouble. It had not been overhauled in a number of years and was rapidly becoming unable to meet our power requirements. More than this, so badly did boilers need re-tubing, re-lining, and so forth, that the insurance company demanded that we do one of three things, viz.:

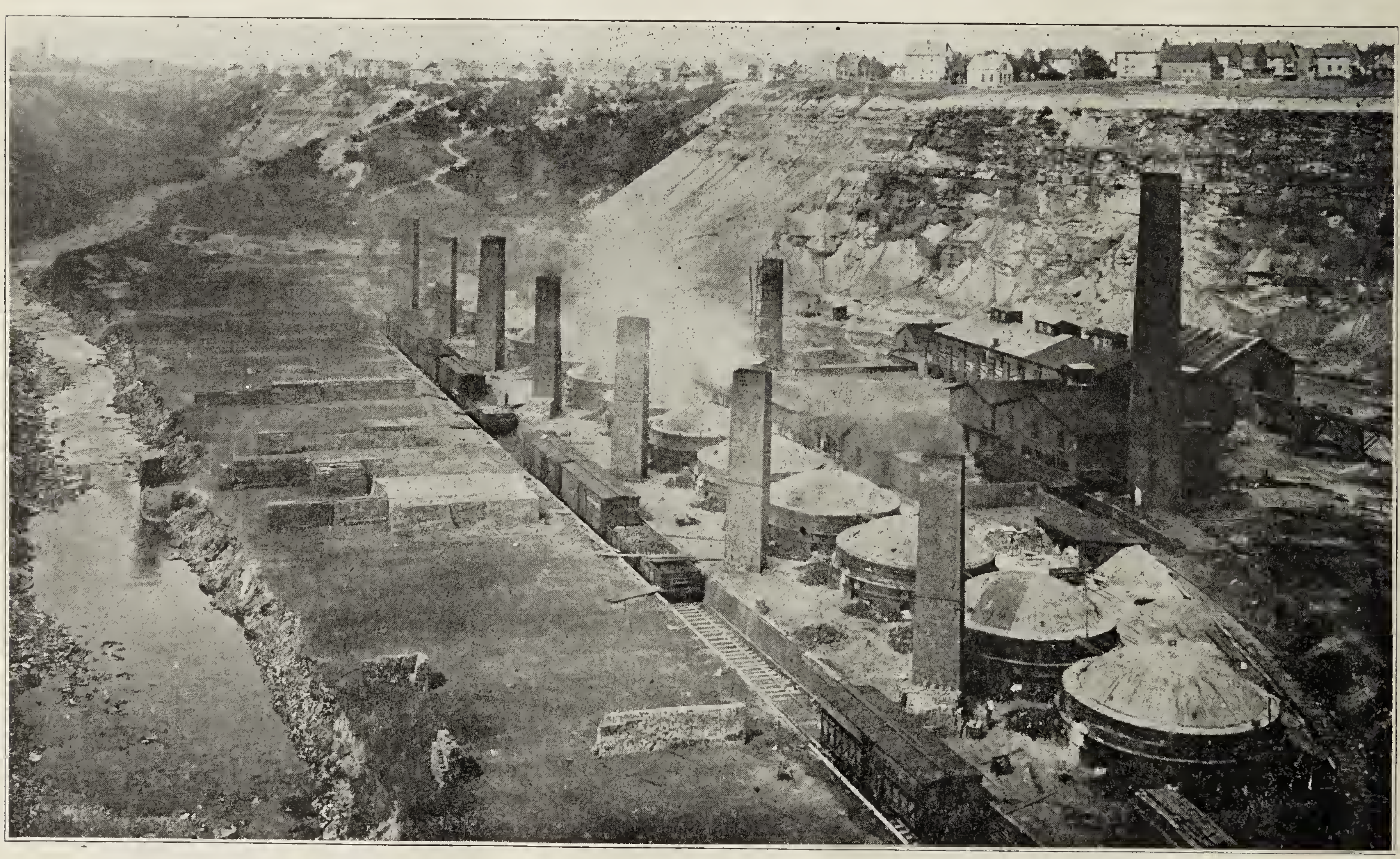
Cut our steam pressure down, or rebuild and overhaul the plant, or pay an enormously increased rate.

"This was serious. We could not afford to pay the increased rate for insurance. To cut our pressure down would curtail our production in corresponding ratio, which would be disastrous. To rebuild the plant would cost as much as electrification, but without anywhere near the subsequent benefits, for, altho it was rebuilt, in the final analysis it would produce but a given amount of power and would not be flexible for expansion beyond that point.

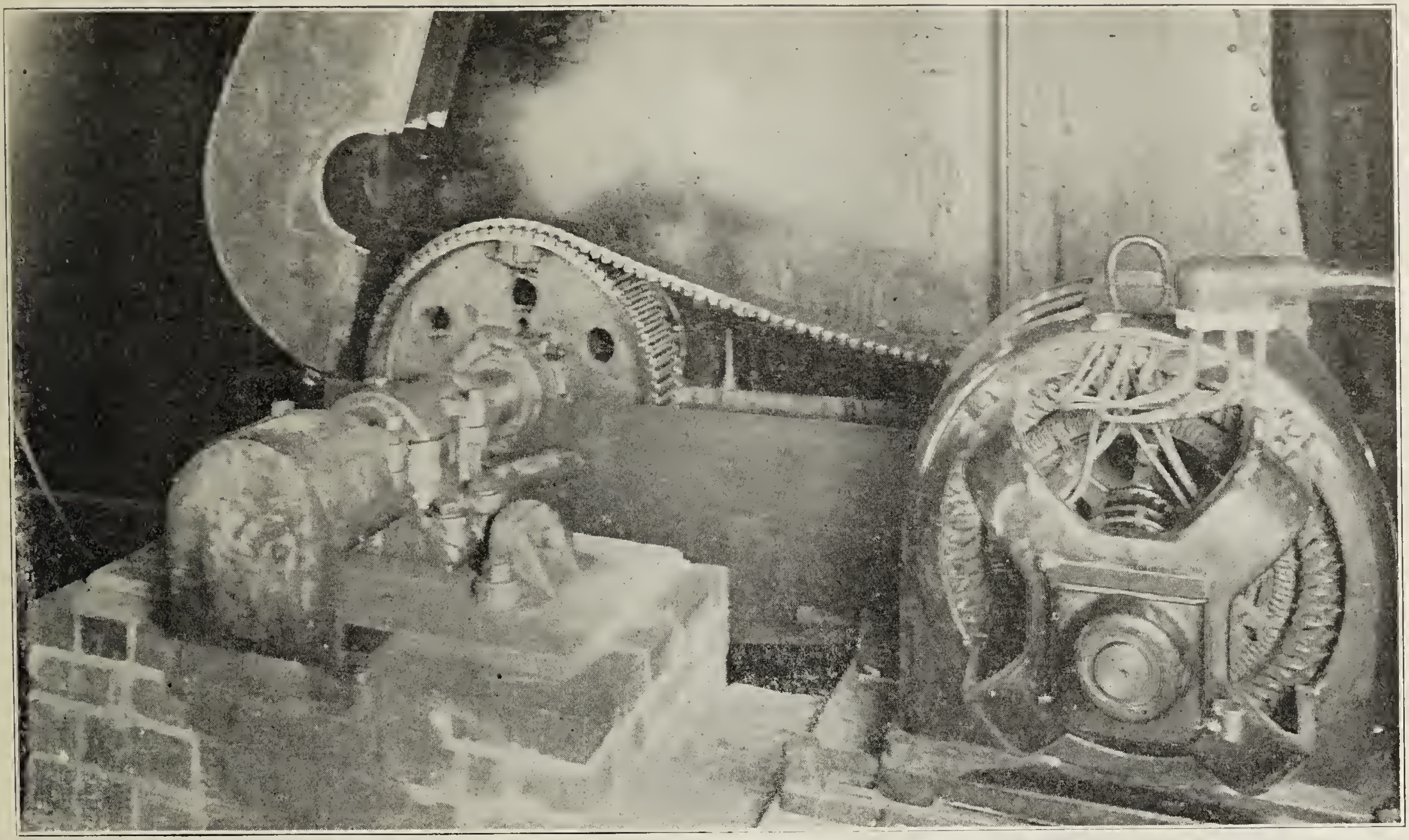
All Angles Carefully Considered

"Hence, electric power was installed, but not until exhaustive research had been made and consideration been given to every possible ramification. Voltage requirements and the possibility of our local station meeting them; wiring; the kind of motors; the type of transmission, and so forth, were all decided upon definitely **before a single penny had been spent.**

"Three motors constituted the original installation, they producing as much power as the former steam plant. These motors, carrying the load of the entire plant, producing as great a tonnage of brick (with greater efficiency) cut our power costs in half. We have since installed five additional motors, we now having eight, and yet the eight motors cost us very little more for power than the original three. This is because of the minimum and maximum rate basis upon which power costs are scaled and which is in effect with our local producers. With regard to this, however, it is only fair to say that there is a limit to the maximum and minimum rate basis and that we have now reached the saturation point. Any further installation will mean additional power costs in proportion to the kilowatts used as, at present, we are con-



General View of Plant of Cleveland (Ohio) Brick & Clay Co. Notice How Neat Everything Looks and How Well the Plant Is Laid Out.



This 20 Horsepower Variable Speed Burke Motor Drives the Fan Which Is Used in Connection with Operating the Waste Heat Dryer. Link-Belt Silent Chain Is Used.

suming up to the limit of the minimum rate. Be that as it may, do not lose sight of the fact that now we are getting greater production at one-half the former costs.

Build on Paper Before Building Actually

"That in brief is our experience with electricity as motive power. It represents the actual result of electrification. There is one point, however, that I would like to bring out forcibly—and if I can succeed in getting the message over sufficiently well to even a limited number in the field, I shall consider that I have done the industry some small amount of good.

"In a general way, it is imperative to make a thoro investigation and research **before** steps are taken and **before** money has been spent. Specifically, it means building your power plant on paper before you start to build it in reality—and the necessity of **completing** the paper construction before tackling the larger job. It means making absolutely sure that all of your power requirements will be met by your source of supply—that your wiring problem will not be so unusual or difficult that a great deal of money will be necessary to complete it after once undertaken. It means a clear headed research of the various kinds of equipment on the market and a final decision to place your business with reliable as well as conscientious manufacturers who have proven their ability to serve the clay industry, and a disposition to give you service, now when you need it and later when you must have it.

Knew Little of Power Plants

"I am frank to say that as a power plant operator I possessed about three million dollars worth of ignorance regarding electricity. I knew little of it or of its application. But I did realize that if the general manager or superintendent did not understand the intricacies of electricity and the properties of electric motors, there must be found someone who does, even if that someone, of a necessity, comes from the outside. The installation and operation of electrical equipment are the duties of an electrician and until I could make myself sufficiently conversant properly to operate the power units I realized that I must rely upon outside or foreign help. In a way I was at the mercy of the manufacturer's representatives, it only remaining for me to recognize truth from exaggeration, good from bad, and to pass sound judgment upon the equipment offered. And now that the installations have been made and I have behind me four interesting years of experience, I am equally frank to say that many times I did not know how very near the brink of unsound judgment I had been, nor what that unsound verdict would ultimately have cost me.

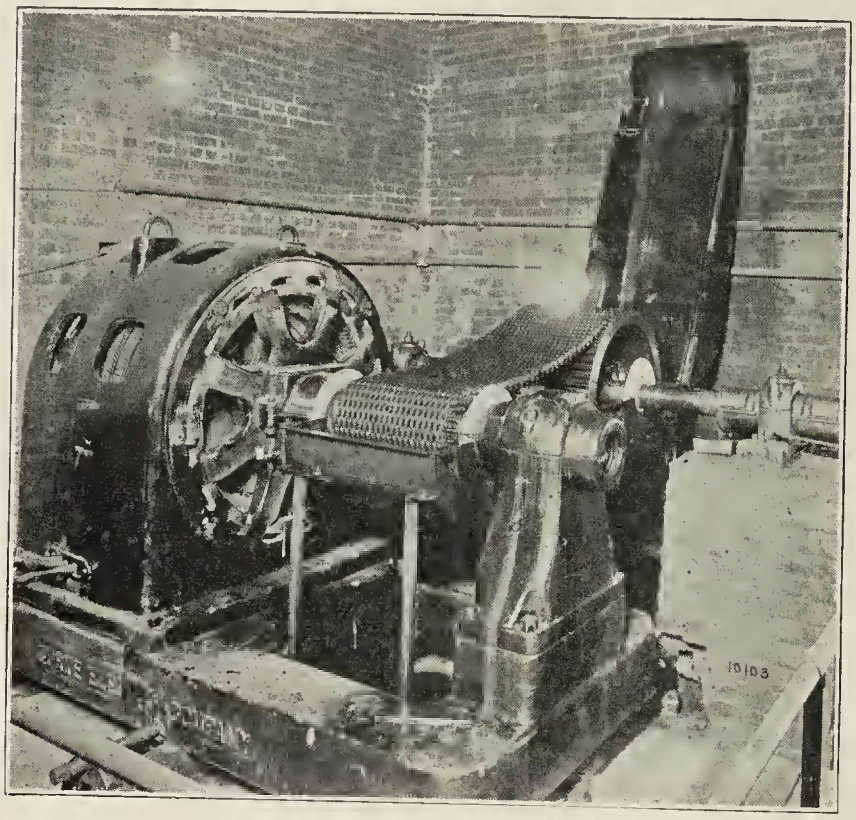
"There are a number of things that I cannot say here. Names are one of them. But I will say that after having made my selection of motors, I found that the make was unknown to my board of directors and that mine was the dual role of salesman and purchasing agent. I first had to sell my owners before I could buy. Yet I now see that failure to have done so would have meant subsequent expenditures double or triple those we now maintain. On the transmission end I am proud to say that I selected the Link-Belt silent chain drives. As a result, my plant is free from trouble, worry or expense in that matter.

How One Company Went Wrong

"But to show the imperative need for complete investigation I might cite the experience of a manufacturing concern whose intention it was to build a large plant on 20 acres in the vicinity of Cleveland, Ohio. They purchased the land (at a very sizeable figure), built a spur from the railroad and started excavation. When they applied for electric power they were very graciously received and informed that the power would gladly be furnished—if only the company would finance the extension of electric power lines, as it would be impossible to supply the power otherwise! Astonished and taken aback at such a proposal, yet possessing no alternative, the company realized that this unforseen expense would total over $70,000—an additional expenditure too large to bear. And so—you will find the 20 acres still out there, with its gently curving spur. But no plant—no activity. The company has moved elsewhere, and their investment lies there doing nothing but eating six per cent. interest with taxes, each year. And all could have been prevented if more thoro research had been made at the outset.

A Costly Mistake

"Another instance I have in mind brings us back to our own industry. It has to do with one of the larger and more successful brick and clay products plants down state. This company had decided to electrify its plant—and after spending a great deal of money and time installing motors and other equipment, they found that sufficient power could not be obtained at any price. They, unlike the manufacturing concern, could not back up. They had to go ahead. So now they are running their old steam plant to generate the remaining part of power necessary to operate their new installation. And running two power plants at the same time is not the most economical way of making brick.



Main Drive. A 250 Horsepower Burke Squirrel Cage Motor with Link-Belt Silent Chain for Transmitting Power.

"There are many other contingencies of course to consider, among them arrangement of switch board, additional space on it for other units which will be added later, proper location of receptacles to operate portable electrical equipment, such as conveyors, blowers, and so forth, but when considering electrification there is an age-old maxim that is well worth remembering. Simply this:

"'Be sure you are right and then go ahead.'"

* * *

FACE BRICK DIVISION HAS FINE MEETING

A. B. Adams, general manager, Key-James Brick Co., Chattanooga, Tenn., and chairman, Southern Division of the American Face Brick Association, reports that the Southern Division had an extremely interesting and largely attended meeting in Birmingham on June 27 and 28.

A very interesting article on "Burning Clays" was submitted by O. A. Harker, of the Dixie Brick & Tile Co., and a visiting program was carried out, during which plants of the Birmingham Clay Products Co., at Sibleyville, Ala., L. L. Stephenson at Lovick, Ala., Russell Clay Mfg. Co. at Alton, Ala., Alabama Clay Products Co. at Bessemer, Ala., Southern Clay Manufacturing Co., North Birmingham, were visited. A number of manufacturers had their plant superintendents in attendance and much benefit was derived from the meeting.

It is contemplated to hold the next meeting of the Southern Division at Signal Inn, Signal Mountain, near Chattanooga, Tenn., making it a two-day session. A visiting program will be arranged that will include the Key-James Brick Co. plant at Alton Park, Tenn., Chattanooga Sewer Pipe Co.'s plant, and diversified clay-working industries at Melville, Tenn., where the B. Mifflin Hood Brick Co. manufactures roofing tile, promenade floor tile; Herty Turpentine Cup Co. operates two plants and is producing hollow tile, drain tile and face brick, and the Pringle Turpentine Cup Co. is manufacturing acid rings and hollow building brick. This meeting will be held some time during the latter part of August. The date has not as yet been decided.

* * *

SOUTH RAISES BRICK PRICE

Recent price advances of approximately 50 cents to $1 per thousand on common brick in the southeastern district, and from $2 to $3 per thousand on some grades of face brick, do not appear to have had any serious effect on the volume of orders being received by the southern plants, manufacturers thruout the district advising Brick and Clay Record that they are continuing to operate at capacity with all the business in hand they can well take care of. A majority of the larger plants have been from 30 to 60 days behind in their orders for the past five or six months, and about this same condition still prevails.

In Atlanta more than 200 members of the building trades have recently left for points where higher wages are being paid, but the number has not been sufficient to have any serious effect on the city's construction program.

The outlook is very promising for the rest of the year, and most of the brick manufacturers in the Atlanta district now seem certain that 1923 will likely prove the biggest and best year the industry has ever enjoyed in that section.

* * *

BUREAU OF STANDARDS STUDYING HOLLOW TILE DIES

Manufacturers of hollow building tile will be interested to know that the Bureau of Standards has undertaken research work and study of hollow tile dies. This study will be pursued with a view to eliminating such troubles as lamination, cracks and other troubles now common in hollow tile manufacture. It is planned to study a number of distinct types of clay especially those of certain degrees of plasticity in the hope that some standards of die construction will be evolved.

The Hollow Building Tile Association deserves the credit for starting the Bureau of Standards on this investigation and all manufacturers of hollow tile are urged to give the Bureau all possible co-operation.

* * *

BRICK HOUSE COST HIGHER

The index of the cost of building materials entering into the construction of a six-room brick house, as compiled by the Department of Commerce, stood at 214 in May, on a 1913 base, as compared with 209 in April and 176 in May a year ago. Production of oak flooring in May amounted to 34,636,000 feet, as compared with 21,914,000 feet in May a year ago. Cement production in May amounted to 12,910,000 barrels and shipments totaled 14,257,000 barrels for the month. The estimated total bookings for fabricated structural steel in May amounted to 145,000 tons, as against 202,500 a year ago.

Clay Sewers Withstand Severe Test

Evens and Howard Sewer Pipe, 36 Inches in Diameter Successfully Hold up Load of 83,000 Pounds—Compare Sewer Pipe with One Ring Brick Sewers

Tests Show One Ring Brick Sewers 36 Inches in Diameter to Be Satisfactory—Withstand Strength Test—Not as Foolproof as Pipe Units

DETERMINING TO ESTABLISH the strength of large sized vitrified sewer pipe and one ring brick sewers, the city of St. Louis, Mo., in October, 1922, conducted some interesting tests. Results of the tests showed the city engineers to be correct in their assumption that one ring brick sewers were satisfactory. The sewer pipe and brick section tested were 36 inches in diameter and in the matter of strength there would seem to be little difference. Vitrified pipe, however, has the advantage over the one ring brick sewer in that it is more easily laid, and to a greater degree fool proof. In other words, it is easier to make a strong and substantial sewer main out of vitrified pipe than out of brick. Where brick is carefully laid, however, by competent masons, the St. Louis tests show it to be the equal of sewer pipe.

36 Inch Sections Tested

For the tests, sections of 36 inch double strength vitrified clay pipe and one ring brick sewer also 36 inches, were built. The pipe was picked from the stock pile of the Evens & Howard Fire Brick Co. and considered to be a fair average representation of St. Louis manufactured pipe. The brick used were sewer brick furnished from stock by the Hydraulic-Press Brick Co.

Following is the report made to W. W. Horner, Chief Engineer of sewers and paving of St. Louis, by the assistant and covers all the details of the tests:

CONSTRUCTION: Both sections were constructed according to standard city specifications, care being taken to insure that both sections had a full even bearing thruout the invert. This was accomplished by carefully shaping the bottoms and filling small depressions with sand. Hemp gaskets were used for the lower half of the pipe and joints were entirely filled with cement mortar. Brick were laid according to usual practice, joints being kept as thin as practicable.

Equipment Used for Measuring

LOCATION: Tests were conducted at the eastern end of the street department yards near De Tonty Street and Missouri Pacific tracks. This site was selected because it was convenient to the Banner Iron Works where pig iron for loading was obtained and also because the soil there was a good natural yellow clay, typical of St. Louis conditions.

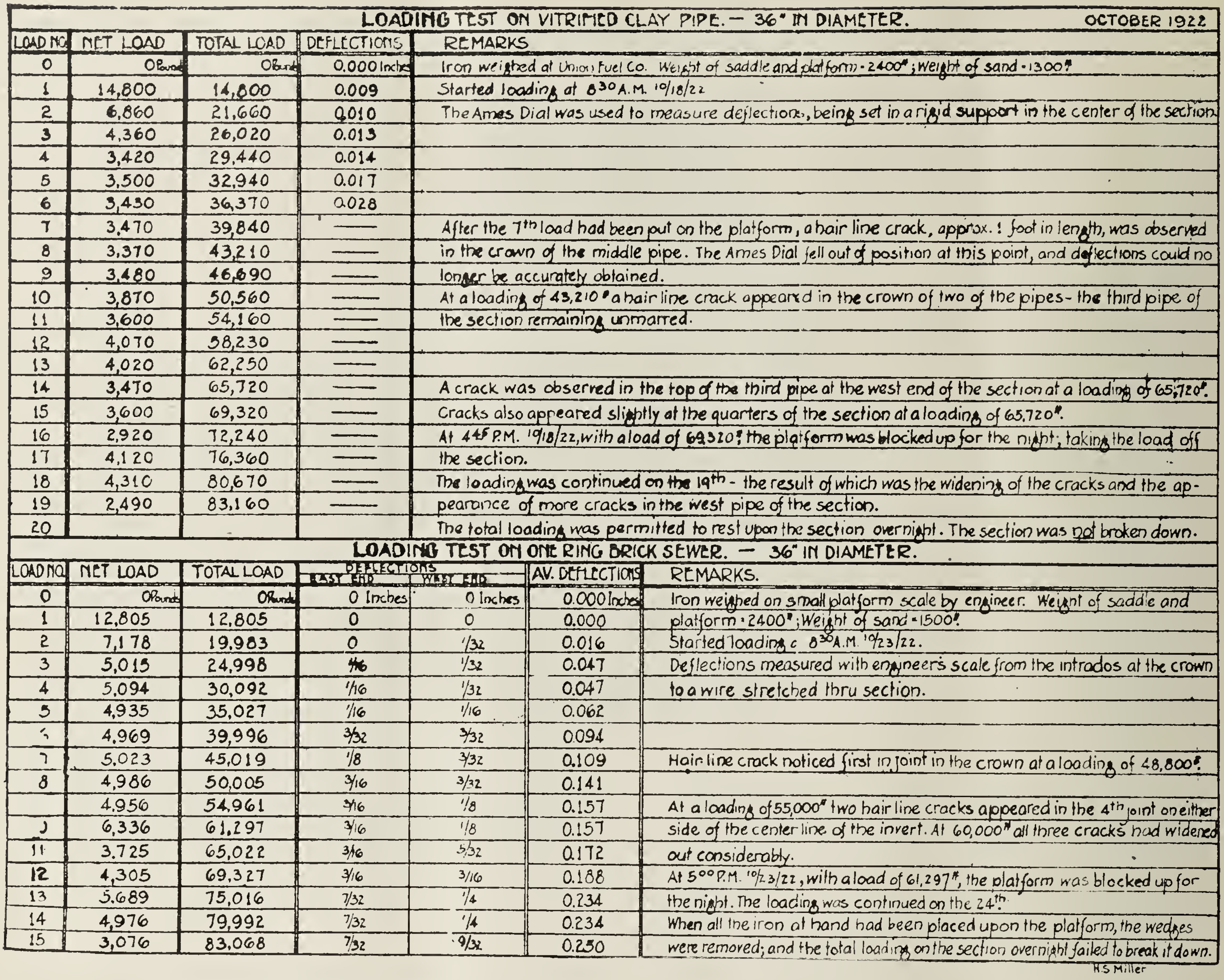
EQUIPMENT: The equipment used was as shown in the picture. An Ames dial set rigidly in place in the center of the sections was used to measure deflections in the pipe, which was tested first. This worked very well up to the time when the first cracks appeared. The support for the dial then kicked out and broke the dial. Accordingly the pipe test had to be completed without deflection measurements. For brick sections a wire was stretched thru the section about three inches from the intrados and measurements made with an engineer's rule.

Two Months Old at Loading Time

LOADING: It was originally intended to load the sections at the age of 28 days, but at that time no satisfactory loading material could be obtained. As a result the pipe section stood from August 17 until October 18 and the brick from August 28 until October 23, and the structures were, therefore, approximately two months old at time of loading. Results of the tests are clearly shown on the attached table which gives a complete account of the progress of both tests. All the iron available, amounting to approximately 80,000 pounds, was placed on both sections without breaking either down. Both sections were cracked, the pipe seemingly worse than the brick, but both seemed capable of sustaining considerable more load before complete failure.

Withstand 83,000 Pounds

The sections as built were nine feet long, and the sand cushion thru which the load was applied was 2½ feet wide and seven feet long, giving a loading area of 17½ square feet. At the maximum load of 83,000 pounds, this would give a load per square foot of approximately 4,700 pounds. Considering this as a uniform load, it would be equivalent to an earth fill over a sewer 47 feet deep. As a matter of fact loads applied in the manner of these tests are more severe than a uniform earth load due to the absence of supporting



LOADING TEST ON VITRIFIED CLAY PIPE. — 36" IN DIAMETER. OCTOBER 1922

LOAD NO.	NET LOAD	TOTAL LOAD	DEFLECTIONS	REMARKS
0	0 Pounds	0 Pounds	0.000 Inches	Iron weighed at Union Fuel Co. Weight of saddle and platform - 2400#; weight of sand - 1300#
1	14,800	14,800	0.009	Started loading at 8^{30} A.M. 10/18/22
2	6,860	21,660	0.010	The Ames Dial was used to measure deflections, being set in a rigid support in the center of the section.
3	4,360	26,020	0.013	
4	3,420	29,440	0.014	
5	3,500	32,940	0.017	
6	3,430	36,370	0.028	
7	3,470	39,840	——	After the 7th load had been put on the platform, a hair line crack, approx. 1 foot in length, was observed
8	3,370	43,210	——	in the crown of the middle pipe. The Ames Dial fell out of position at this point, and deflections could no
9	3,480	46,690	——	longer be accurately obtained.
10	3,870	50,560	——	At a loading of 43,210# a hair line crack appeared in the crown of two of the pipes - the third pipe of
11	3,600	54,160	——	the section remaining unmarred.
12	4,070	58,230	——	
13	4,020	62,250	——	
14	3,470	65,720	——	A crack was observed in the top of the third pipe at the west end of the section at a loading of 65,720#.
15	3,600	69,320	——	Cracks also appeared slightly at the quarters of the section at a loading of 65,720#.
16	2,920	72,240	——	At 4^{45} P.M. 10/18/22, with a load of 69,320# the platform was blocked up for the night; taking the load off
17	4,120	76,360	——	the section.
18	4,310	80,670	——	The loading was continued on the 19th - the result of which was the widening of the cracks and the ap-
19	2,490	83,160	——	pearance of more cracks in the west pipe of the section.
20				The total loading was permitted to rest upon the section overnight. The section was not broken down.

LOADING TEST ON ONE RING BRICK SEWER. — 36" IN DIAMETER.

LOAD NO.	NET LOAD	TOTAL LOAD	DEFLECTIONS		AV. DEFLECTIONS	REMARKS.
			EAST END	WEST END		
0	0 Pounds	0 Pounds	0 Inches	0 Inches	0.000 Inches	Iron weighed on small platform scale by engineer. Weight of saddle and
1	12,805	12,805	0	0	0.000	platform - 2400#; Weight of sand - 1500#.
2	7,178	19,983	0	1/32	0.016	Started loading c 8^{30} A.M. 10/23/22.
3	5,015	24,998	1/16	1/32	0.047	Deflections measured with engineer's scale from the intrados at the crown
4	5,094	30,092	1/16	1/32	0.047	to a wire stretched thru section.
5	4,935	35,027	1/16	1/16	0.062	
6	4,969	39,996	3/32	3/32	0.094	
7	5,023	45,019	1/8	3/32	0.109	Hair line crack noticed first in joint in the crown at a loading of 48,800#.
8	4,986	50,005	3/16	3/32	0.141	
	4,956	54,961	3/16	1/8	0.157	At a loading of 55,000# two hair line cracks appeared in the 4th joint on either
10	6,336	61,297	3/16	1/8	0.157	side of the center line of the invert. At 60,000# all three cracks had widened
11	3,725	65,022	3/16	5/32	0.172	out considerably.
12	4,305	69,327	3/16	3/16	0.188	At 5^{00} P.M. 10/23/22, with a load of 61,297#, the platform was blocked up for
13	5,689	75,016	7/32	1/4	0.234	the night. The loading was continued on the 24th.
14	4,976	79,992	7/32	1/4	0.234	When all the iron at hand had been placed upon the platform, the wedges
15	3,076	83,068	7/32	9/32	0.250	were removed; and the total loading on the section overnight failed to break it down.

H.S Miller

Chart Showing Results of Loading Tests on Both Pipe and Brick at Different Stages of the Test.

horizontal reactions and that the carth itself would tend to arch and support a part of the load.

Both Types Proven Good

CONCLUSIONS: Judging by these tests, either section, if properly constructed in soil of good bearing quality, seems capable of sustaining loads placed on them in ordinary sewer conditions.

There are certain differences between the two types of sewer which must be considered before adopting a standard type. The main one of these, of course, is the difference in coefficients of friction, which being larger for brick would require a larger brick sewer to carry the same amount of water. Another is that bricklaying would have to be more carefully done than on the ordinary run of sewer work, special care being taken to bed the brick and to keep the joints thin. In order to reduce the number of joints, it would seem advisable to use nothing but whole brick. The green arch is very flexible and is easily distorted or pushed out of place, and in order to avoid such disturbances, centers should be allowed to remain in place until the mortar has set. Another factor would be the impracticability of using such construction in wet ditches.

Brick Not As Foolproof as Pipe

The primary object of the test was to determine the strength of a one ring brick section, as pipe of this size have been in use for years and have given satisfactory service. The test, then, in respect to pipe, merely confirms the results of past experience. The one ring brick proved itself to be as strong, if not stronger, when built in accordance with the above recommendation. However, it is certainly not as foolproof a type as pipe and, if used, care should be taken as to where to use it and as to how it is built.

* * *

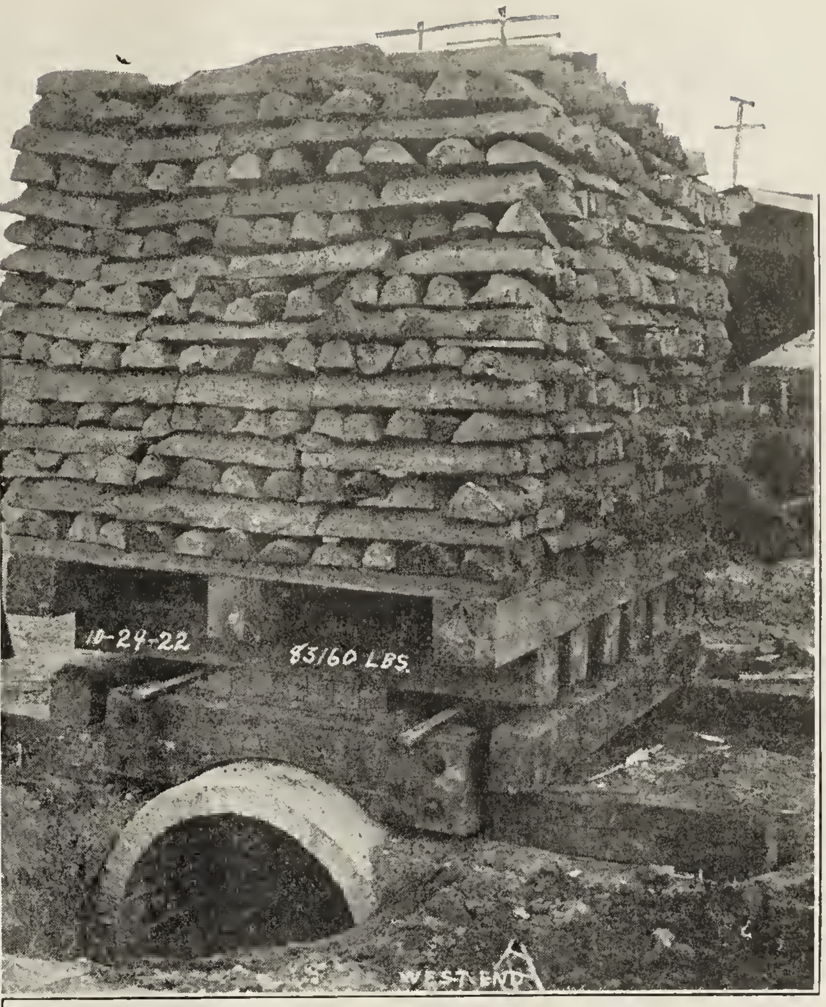
TESTS FOR MORTAR JOINTS

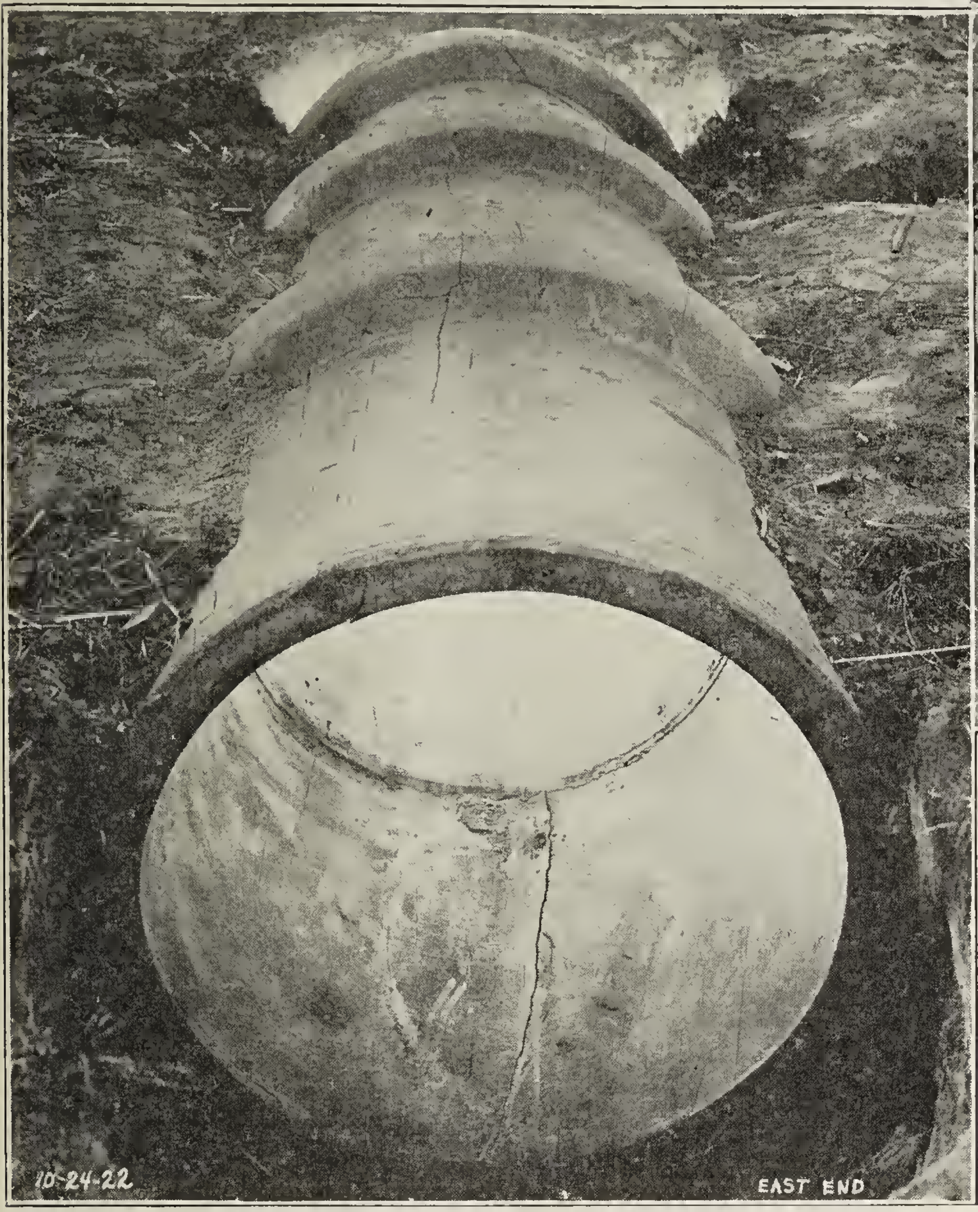
It is reported that bond tests are in progress at the Bureau of Standards to determine the strength of joints in stone construction work. It is expected that this series of tests will be extended later to determine the effect of various treatments on the strength of the bond, such as, for instance, waterproofing the backs and sides of the stone with pitch or colorless waterproofing materials.

* * *

HUDSON RIVER PRICE JUMPS $1

The scarcity of labor at the Hudson River brick plants, coupled with increased cost of production and heavy demand has brought about an advance in quotations at New York, where a price of $21 a thousand for best grades, wholesale, is now being asked, as compared with a previous figure of $20. The labor shortage has had a marked effect upon production at the present time and altho sufficient brick is reaching the market, there is no possibility for creating any reserves. On an average of 45 to 48 cargoes weekly are reaching the local docks, with every load quickly sold and distributed. There are practically no cargoes at all on hand. The question of coal is also a matter of concern with producers, for up to the present time there has been greater delay in securing necessary quantities. An improvement, however, is looked for in this line.





At Left Is Section of 36 Inch Sewer Pipe After Test. Altho the Pipe Had Cracked Under 83,000 Pounds Load Its Condition Was Such That It Was Evident Considerably More Weight Could Have Been Added Without Effecting the Pipe's Complete Failure.

Top View Shows Apparatus Used in the Loading Tests and the Brick Sewer Section Under Load.

INDEX NUMBERS OF WHOLESALE PRICES

(1913=100)

	1922 May	1923 April	1923 May
Farm products	132	141	139
Foods	138	144	144
Cloths and clothing	175	205	201
Fuel and lighting	216	200	190
Metals and metal products	110	154	152
Building materials	160	204	202
Chemicals and drugs	122	136	134
House furnishing goods	176	187	187
Miscellaneous	116	126	125
All commodities	148	159	156

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THIS SYNTHETIC BRICK PROBLEM

Another shock to the brick man who continues to be complacent and to discount the danger of any other material usurping the place which his brick have held, as he so proudly states, "for 3,000 years," is contained in a little paragraph tacked onto the end of an article appearing in a recent issue of Collier's Magazine. This article extolled the virtues of Reno, Nevada, as a home building community rather than one which tears them asunder in its famous divorce courts. The particular paragraph here referred to calls attention to "the mountains of what the chemists call diatomaceous soil, which looks like chalk but which can be bound with magnesite to produce building blocks cheaper than brick or concrete, and only a small fraction of their weight. Capital is already becoming interested. Reno may soon lose her ridiculous title as the Divorce City and become known to fame as the greatest home-building center in America. It depends, of course, on how the enterprise pans out."

In itself this announcement is unimportant. But when coupled with the hundreds of similar ones which every month find their way into the news columns, each telling of new enterprises that will make brick out of some other material than clay, this synthetic brick industry assumes proportions which can no longer be ignored with safety

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FARM CROPS LOOK PROMISING

An improvement in the outlook for the 1923 winter wheat crop is shown by the government crop report for May 1. A harvest of 578,287,000 bushels is forecast, or 6,000,000 bushels more than indicated a month before. This is 8,000,000 bushels less than was harvested last year. The May 1 average condition was 80.1 per cent. of normal compared with 75.2 per cent. on April 1, 83.5 per cent. on May 1 last year, and a ten year average of 87.5 per cent. Unfavorable weather conditions during the winter and spring resulted in a loss thru abandonment of 6,629,000 acres which is 14.3 per cent. of the acreage seeded to wheat last fall. The ten year average abandonment is 9.8 per cent.

FINE CERAMIC MANUFACTURE

A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

PROPOSED TENTATIVE FELDSPAR SPECIFICATIONS

Editor's Note.—The specifications here printed are published by the courtesy of the Journal of the American Ceramic Society, issue of June, 1923, in which they were first made public. They were prepared by the Committee on Standards of the White Wares Division, of which G. Sladek is chairman.

SINCE the last Annual Meeting, 1922, the Committee has been in correspondence with several producers and large consumers of feldspar.

The consumers are a unit as regards specifying the characteristics of the feldspar they purchase. As might be expected the producers see many difficulties in the way. However great and real these difficulties are, they must be surmounted to the end that the industries which give to feldspar its value may enjoy a greater measure of freedom from uncertainty and consequent loss.

Specifications for commercial feldspar and flint by A. W. Watts,[1] have assisted us all, as well as the thoro work published as Bulletin 53, of the Bureau of Mines, 1913, on the "Mining and Treatment of Feldspar and Kaolin."

Feldspar Being Ground Finer

It has become the practice of certain manufacturers to use more than one kind of feldspar and ground to various degrees of fineness. Feldspar millers are now grinding finer than was the common practice of even two years ago. In this connection a series of valuable suggestions have been received from G. E. Sladek calling attention to the fact that at the present time feldspars in use are of definitely different composition and definitely different grinding characteristics.

Specifications for Commercial Feldspar for Use in the Manufacture of Whiteware

In view of the above it is suggested that Prof. Watts' specifications be amended as follows:

1. The Sample.—In sampling carload lots, equal amounts should be taken from at least five different points in the car, no two samples being taken within five feet of each other. In sampling from a bin, five separate samples shall be taken from different portions of the bin and not more than two from the same level. The total sample shall not be less than ten pounds.

The samples shall be thoroly mixed on a smooth surface, divided in halves, one-half spread evenly over the other half. Repeat this operation five times. The mixed samples shall then be quartered and two quarters not adjoining rejected. The remaining quarters shall be mixed as described above, five times, quartered as before and two quarters rejected. The remaining sample shall weigh more than 2.2 pounds (1 kilo.) and shall be placed in a tight receptacle, marked with an identifying number or with the name of the material, car or bin number and date on which the sample was taken.

Chemical Composition

	K_20%	Na_20%	Ca0.Mg0%
	above	below	not above
A	10	3.6	0.75
B	9	3.2	1.00
C	7.8	2.8	1.00
	not above	not below	
D	3.0	7.0	1.00

Physical Properties and Tests

1. Color and Specking.—Bearing in mind the variety of wares in which feldspar is used and the various standards as to color and specking, potters find it necessary to establish; it is considered desirable to leave this matter open to agreement between vendor and vendee.

2a. Fineness of Grain.—One hundred grams of the sample, after being dried to constant weight at 105 deg. C. shall be tested for fineness of grain according to the process set forth in paragraph 2b and the residues on the various sieves shall not exceed the maxima as set forth in the following table:

Screen No.	100	140	200	270	325	Total Residue
Grade 1	0.25	0.5	1.25	2.0	5.0	9%
Grade 2	0.50	1.0	2.5	4.0	6.0	14%
Grade 3	0.75	1.25	3.75	5.0	8.0	18.75%

For the screen analysis the Standard Screen Scale sieves are used, the openings increasing in the ratio of the fourth root of 2 or 1.189 as recommended in Year Book.[2] All percentages are made on the dry basis.

Method of Making the Finest Test

2b. The 100 grams of dry sample shall be transferred to the sieve and over a sieve pan which fits closely enough to prevent loss by slopping. The pan shall contain sufficient water to reach within not less than three-fourths inch (20 mm.) or more than 1¼ inch (31 mm.) from the pan. The sieve and pan shall be vibrated or shaken in such a manner that water in the pan is splashed on the screen from below so as to wash the powder about and cause the material that can pass thru the sieve to pass into the pan below. This treatment shall be continued until no more material can be removed.

The Washing Process

The residue and sides of the sieve shall then be thoroly washed with water by means of a laboratory wash bottle.

2c. In the washing process a fine brush may be used to break down such small aggregates as refuse to break up by washing alone.

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[1] Jour. Amer. Ceram. Soc., 3 (9), 722 (1920).

[2] Year Book, Amer. Ceram. Soc., p. 36 (1922-23).

The order of the sieves shall be as follows: Wash the sample on the 325-mesh sieve to remove all fines, as this facilitates an accurate classification of the coarse material. The material passing this sieve may be concentrated by evaporation to dryness and weighed, or may be immediately thrown away and its amount determined by difference. The residue on the 325-mesh sieve is transferred to the 100-mesh and washed as described above. The material on the sieve is dried and weighed; the material passing the 100-mesh sieve is transferred to the 140-mesh sieve and washed and this process continued to the 200, 270, and 375 in order, the residues on each being dried and weighed.

Note: In the water ground feldspar some lumps persistently refuse to break up. I have found it very difficult to completely wash the material without some aid of this sort and have experienced no objectionable results from a soft brush.

Moisture Content

3. Unless otherwise specified the purchase price shall be based on moisture free material and the moisture content shall be determined as follows: 50 grams of the sample (paragraph 1) are carefully weighed out as soon as possible after sampling, and placed in an oven where a temperature between 105 deg. C. and 110 deg. C. is maintained with proper ventilation till the sample ceases to lose weight, the loss in weight shall be calculated to per cent. of the dry weight and so reported.

In case a suitable chemical balance is available the moisture test may be determined on a five gram sample.

Fusion Behavior

4. Test cones of the feldspar shall be made of standard dimensions, i. e., 2⅞ inches high (75 mm.) by 9/16 inch (15 mm.) across the base of one face. The use of an organic bond, such as dextrine or gum arabic, is permissible to insure cones retaining form prior to fusion, but such added material must burn out completely and not affect the color of the fired material. The fusion behavior of the different feldspars shall be as follows for the grade 2 grind.

Grade A Feldspar shall fuse with or before Orton cone 9.
Grade B Feldspar shall fuse with or before Orton cone 8.
Grade C Feldspar shall fuse between Orton cones 7 and 8.
Grade D Feldspar shall fuse with or before Orton cone 7.

Shipping

5. All material purchased under these specifications shall be shipped in clean closed cars.

Rejection

6. The purchaser reserves the right to reject material which does not conform to the above specifications in every particular and to return rejected material to the vendor for full credit at price charged f.o.b. point of delivery specified by the purchaser.

* * *

POTTERS WIN SANITARY WARE STRIKE

The sanitary ware pottery workers' strike which has prevailed in Trenton, N. J. and vicinity for the past eight months and which has had mention in previous issues of Brick and Clay Record, has at last reached its termination. Wisely heeding the advice of the executive board of the National Brotherhood of Operative Potters, the 1,500 striking sanitary ware operatives have gone back to work without insisting upon any working basis or wage scale, being employed at the same wage rate as is paid to non-union men.

The open shop plan will have a big effect on the production methods and cost of producing sanitary ware. It is now possible for the sanitary ware potters to produce ware by the casting process which will speed up production and reduce cost.

* * *

SAXON PORCELAIN COSTS RISING

The Saxon porcelain industry has been well occupied during the past few months, according to a report to the Department of Commerce from Vice Consul C. T. Steger, Dresden.

Production costs, however, have recently risen to such an extent that prices of porcelain have in most cases reached the world market price, and in come branches, notably in the case of porcelain for the electro-technical industry, are higher. It is stated that costs at present are still rising, especially since the industry is dependent on imported coal, and export trade has suffered under these circumstances.

Raw materials also have risen in price since the last drop of the mark to such an extent that prices of porcelain are much too high for domestic market. The present tendency of customers is to await an expected price reduction. Export business has also recently fallen off appreciably. Very few foreign buyers visited the Leipzig Sample Fair this spring, and few foreign orders have been placed recently. Thus, altho the industry is at present occupied for some time to come, prospects for the future are not favorable.

Conditions in the pottery industry are practically the same. The past year was a very successful one, and production was considerably increased. Sales were satisfactory, and the labor supply was sufficient.

* * *

THE BLUE RIDGE MINING CO.

The Blue Ridge Clay Mining Corporation, Wilkes-Barre, Pa., was incorporated in January 1923 under Delaware Laws The company has a capital stock of $300,000 and mines, refines, pulverizes and ships white clay, ganister, and so forth. A tract of clay land containing over 50 acres has been leased from Gower Bros. of Kunkletown, Pa. The land leased is underlaid with four veins of material, consisting of the following:

Sand and gravel	average depth	16	feet,	cubic yards	..1,000,000
White clay	"	" 24	"	" "	..1,500,000
Yellow clay	"	" 18	"	" "	..1,250,000
Ganister clay	"	" 20	"	" "	..1,350,000

The company will specialize in the mixing and grinding of a high-grade fire clay cement especially adapted for steel mills, blast furnace, cement and coke oven manufacturers. The management of the company will be under a competent and skilled clay expert and engineer who has for many years been connected with the clay industry.

Board of Directors consists of the following:

Wm. M. Evans, brick, stone and concrete contractor, Wilkes-Barre, Pa.; Joseph J. Baer, vice-president, Heights Deposits Bank, Wilkes-Barre, Pa.; Geo. H. Everard, assistant train master, Penna. R. R.; Wm. A. Wilcox, Director Scranton Trust Co., Scranton, Pa.

* * *

ANOTHER POTTERY IN CLEVELAND

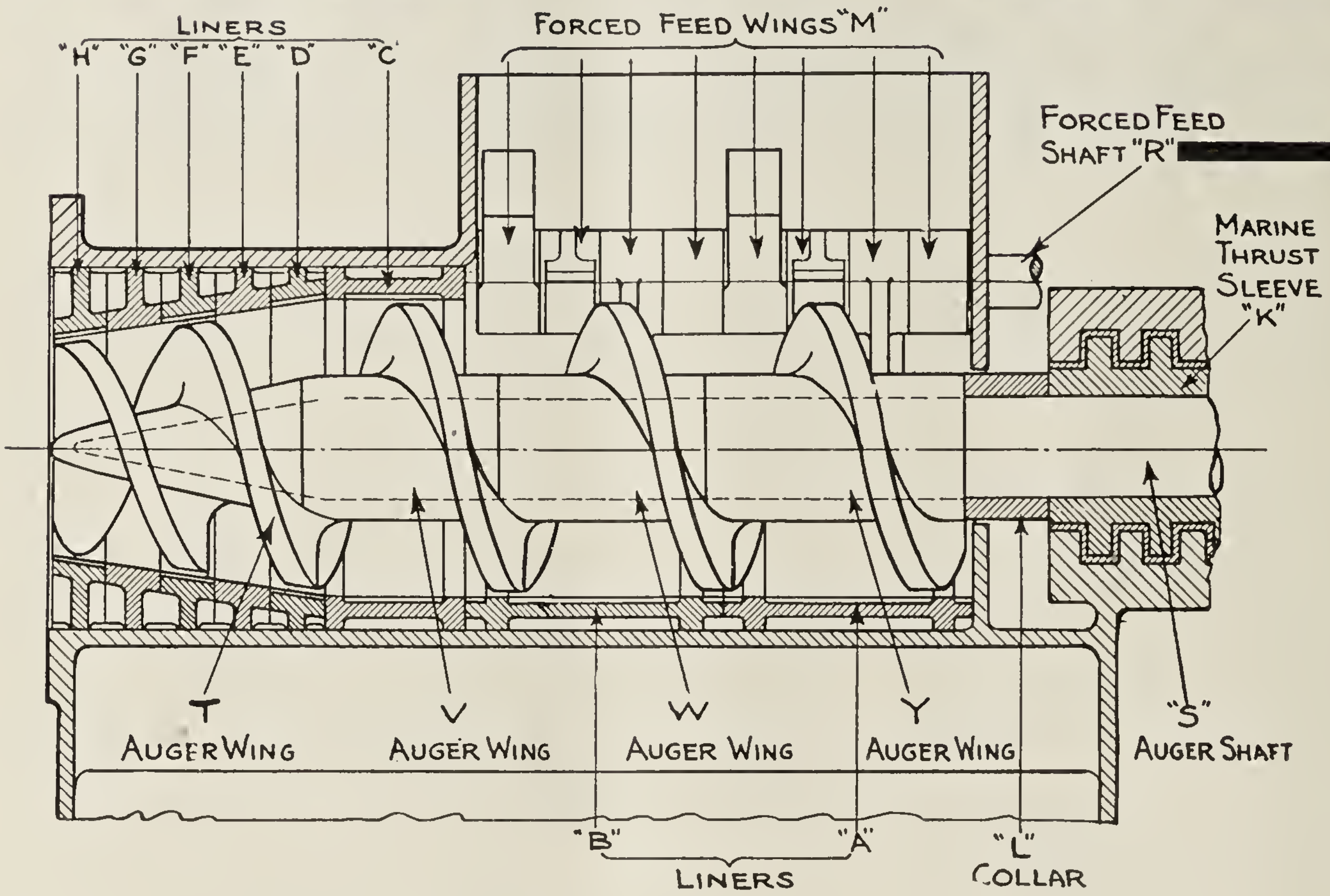
The corporation of The Cleveland (Ohio) Pottery & Tile Co. has been announced. 1,200 to 1,500 shares of no par value are being issued.

* * *

FLOOR AND WALL TILE COMPANY

Cooper & Green, Inc., 74 Elmwood Terrace, Irvington, N. Y., are reported to have been incorporated with a capital of $100,000. It is their purpose to manufacture tile and floor and wall coverings.

Three Points



Intern
Auger

Less La

International ope
straight barrel au
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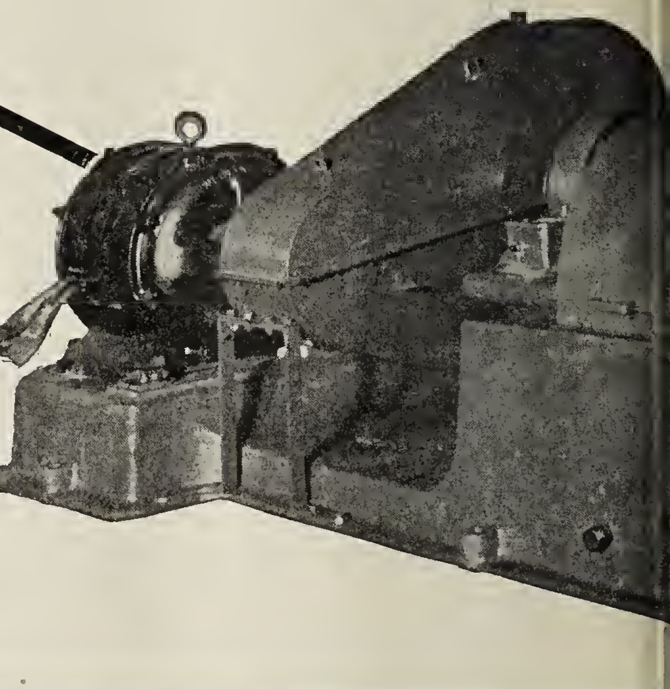
A Stiffer Column

A heavy, strong, one-piece base, large shafts and excellent thrusts (they do not get hot) allow users of International auger machines to run their clay stiffer with resultant saving in drying time.



ENGINEERS
and
DESIGNERS
of
COMPLETE
CLAY PRODUCTS
PLANTS

Internatio

A Big Live Fact

One car of Fuel Oil—delivered automatically to a Standard Diesel Engine—will produce as much power as Eleven Cars of Coal.

Consider the difference in freight on the extra ten cars.

Consider the shoveling of coal and disposal of the ashes.

And then there is the saving in room and attendance.

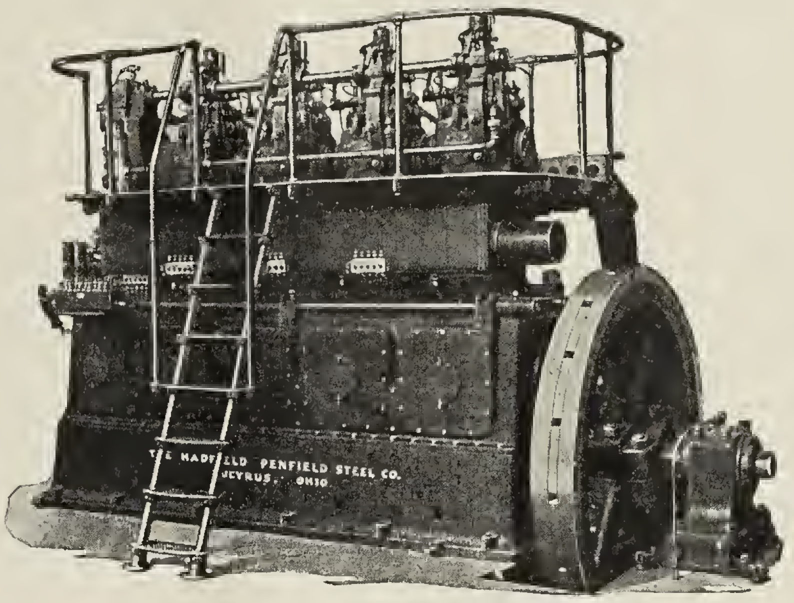
The Clayworker who is interested in money saving and labor saving is interested in the Standard Diesel Engine.

Write for particulars about—

"Diesel Engine Saving in Clay Plants."

The Hadfield-Penfield Steel Co.

Bucyrus, Ohio



200 HORSEPOWER ENGINE

MANGANESE
THE FIRST
ERA
STILL LEADS IN QUALITY
STEEL
THE HADFIELD-PENFIELD STEEL COMPANY
BUCYRUS, OHIO

Wearing Parts of Manganese Steel

Clay Plant Repairs are saved with "Era" Manganese Steel Scraper and muller plates, pug mill knives, auger machine knives, gears and pinions and any other parts where there is excessive wear. We have patterns for all standard parts. Demand "Era" brand. Backed by years of tried service. Tough, hard, wear-ever. Saves and slaves for the Clayworker.

The Hadfield-Penfield Steel Co.

Bucyrus, Ohio

AMERICAN GASOLINE LOCOMOTIVE

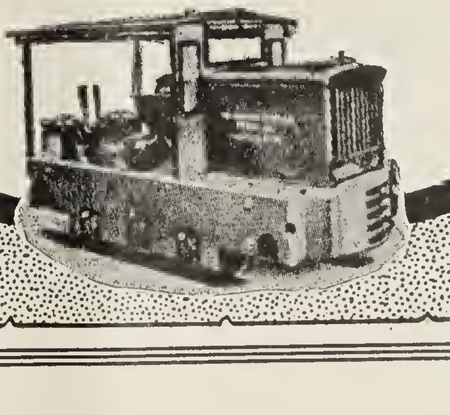
An Ideal Machine to Produce Continuous Haulage at Minimum Cost

If you have haulage work to do, let the Gas-O-Motive do it. The engine is so simple in construction, so ruggedly built, that it can go through the severest service—service that would put other apparatus out of commission—and come out ready for the next job. "Gas-O-Motives" rarely visit the repair shop.

If you have a haulage problem send us your name and address.

"Over a 2,000 foot grade, ranging from 5 to 7 per cent, the American Gasoline Locomotive hauls two cars of 2½ yard capacity each, and does it constantly. It works perfectly." Okmulgee Brick Co., Okmulgee, Okla.

THE HADFIELD-PENFIELD STEEL CO.
BUCYRUS, OHIO



LET

No Repai
in Six
Years

No Shut
Down in Si
Years

"Continuou
Service

50,000 Bricks
Daily from this Kiln
with less than
1% Salmon

BUILT RIGHT
RUN RIGHT

The above picture shows the Lehigh Brick Co. Ki
at Allentown, Pa. "It's a Haigh."

LLENTOWN TELL YOU

Continuous!

Just what does that word "Continuous" mean when you say "Continuous ln?"

In the accepted term it means that you keep burning in the various de- rtments of the kiln without allowing the fires to go out in order to remove ware.

But in the Haigh Continuous Kiln it means more.

At Allentown, Pa., this kiln, shown here, has been in "Continuous" opera- n since the day it was started—six years ago.

Even during the war, when others had to cut their coal consumption to lf, this Allentown kiln kept its fires going "Continuously" because it was ing less than half the coal per thousand brick that other manufacturers were ing. That's the way the Haigh Kiln saves for you.

Six Years' "Continuous" Service.
No Shut Down in Six Years.
No Repairs in Six Years.
No Bats or Waste.
One Per Cent of Salmon.
One Half the Fuel of Other Kilns.
50,000 Rough Texture Face and Common Brick Daily.

That is briefly what The Lehigh Brick Co., of Allentown, Pa., is doing th the Haigh Continuous Kiln.

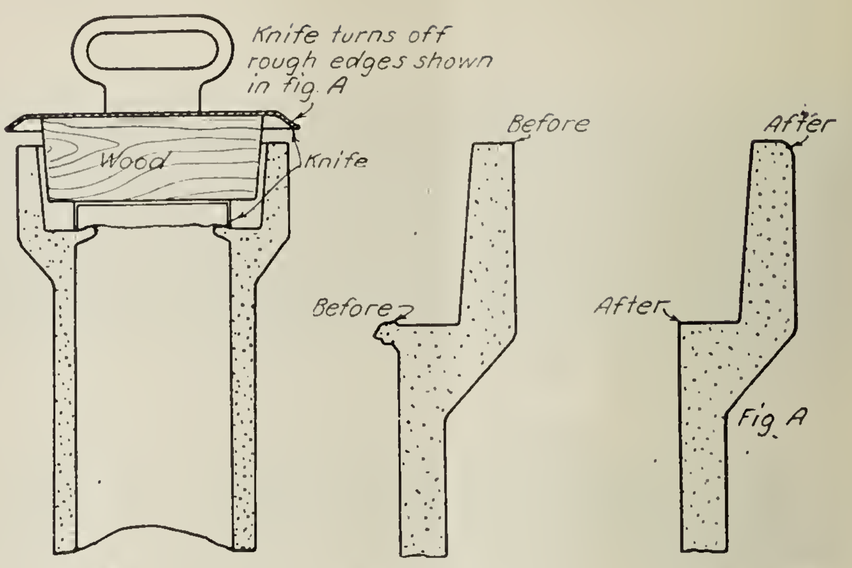
"Let Allentown Tell You."

The Hadfield-Penfield Steel Co.
Bucyrus, Ohio

clay products industry equals almost 5,000,000 pounds every year, and the total use of blasting powder equals almost 172,000 kegs per year, this 30 per cent. reduction in cost should interest many in the industry.

* * *

TOOL FOR FINISHING SEWER PIPE



Small Sizes of Sewer Pipe Can Be Finished Off Quickly and Easily with This Handy Tool

Here is a handy tool for finishing off the edges of small terra cotta sewer pipe. As every manufacturer knows, the pipe as they come from the press have rough edges of clay projecting from the corners which make an unsightly looking piece of ware. The tool here described and illustrated fits into the bell of the pipe and is revolved once or twice by hand. The knives are placed on the edges and at the bottom of the tool so that they will cut off the rough edges of the pipe and provide a smooth edge and neat looking pipe. To trim off the outside edge of the bell and to cut out the excess clay in the throat of the pipe, is a rather delicate operation and one must use the utmost care so that too much is not taken off. There should be a tool of this kind for every size of pipe. This method of finishing small pipe has several advantages over many of the methods now in use which will be apparent at once.—F. Clinton Jarboe.

* * *

When Acceptance of an Offer Completes a Contract

Ralph H. Butz

THERE are many instances where disputes have arisen between a seller and a buyer because the seller wanted to withdraw an offer after it had been accepted by the buyer. In the majority of cases of this nature the acceptance is transmitted thru the mails, and the seller has not received the letter of acceptance at the time he wants to call off the offer. Under such a condition he is of the opinion that as long as the acceptance has not been received by him he is at liberty to withdraw his offer. In fact there are very many business men who are of this opinion, and when such is the case it merely proves that they are not well informed concerning these points in the law of contracts. For this reason it will be interesting to business men and will no doubt amply repay them to read what the law is on such points.

When Contract Is Completed

When a seller makes an offer by letter and it is understood that the buyer is to accept the offer by letter, then the buyer's acceptance is binding upon the seller as soon as such letter of acceptance has been posted in the mail, even tho the seller claims to have withdrawn the offer before the acceptance reached him.

This principle can best be illustrated by a case in point. Bradley wrote a letter to Strafford, making an offer of material at a certain price, with the understanding that the offer was to be accepted within one week from the date it was made. Strafford mailed his letter of acceptance on the sixth day following the date of the offer. Bradley did not receive this letter until four days later, and then he claimed that there was no contract because he had not received the acceptance in the time specified. The court held that the acceptance was binding upon Bradley, because Strafford had accepted within the time mentioned in the offer. The contract arose from the time the acceptance was posted in the mail.

When an Offer Is Cancelled

If, as Bradley claimed, he meant that the acceptance would have to be in his hands within seven days, then he should have stated this in making the offer.

After an offer is properly accepted the seller cannot call it off without being liable for breach of contract. The contract is then completed and it cannot be cancelled unless both parties give their consent. If the seller does not want to be liable he must withdraw the offer before it is accepted, and give notice to the buyer of such withdrawal. An offer is not cancelled until the buyer receives the notice to this effect. Thus, if the seller decides to withdraw his offer and writes to the buyer that the offer is withdrawn, such a withdrawal is not effective until the buyer receives the letter. Even tho the seller mails his withdrawal before the buyer posts his acceptance, the seller is still bound to fulfill the contract.

Make Conditions Plain

In making an offer which should be accepted within a short time it is always advisable to state the conditions plainly, so that there will be no mistake in their interpretation. If a seller makes an offer, which is to be accepted within two days, he will protect himself by stating that the acceptance must be received by him prior to a certain time. If he merely states that the offer must be accepted within two days, and the buyer does post his acceptance within this time, but the letter is lost and never reaches the seller, it may still be possible for the buyer to claim breach of contract because the seller does not fulfill his part of the contract.

Where the Contract Arises

Occasionally it is necessary to determine where a contract arises, since the laws of various states differ, and the enforcement of the contract depends upon the laws in the state where the contract arose. The established rule in such cases is that the contract arises at the place where the offer is accepted. If a Philadelphia seller makes an offer to an Omaha buyer, and the acceptance is posted at the latter place, then the contract is completed at Omaha, and the laws of Nebraska must be relied upon if any difficulties arise in the enforcement of the contract. The reason for this rule is that the acceptance is necessary to complete the contract, and at the place where the contract is completed, there the contract arises. This rule holds good when acceptances are made by letter, telegram or telephone. When the parties are dealing face to face, the place where they are at the time the agreement is made is the place where the contract arises.

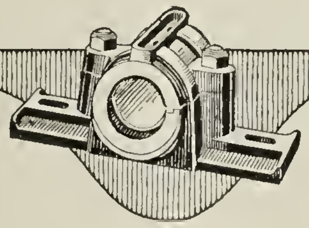
GEARS

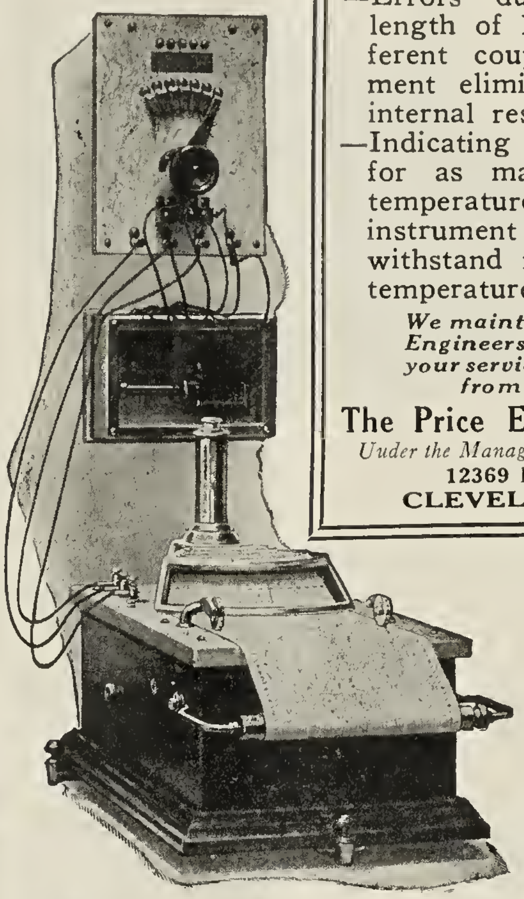
SMOOTH running; correct in design, accurate and true to pitch, Caldwell gears are bound to please you. We make all types—machine-molded, cut tooth, mortise gears, worm gears, etc. Caldwell Promptness is Traditional. It is at your service. Our stocks assure prompt shipment.

Let us figure with you next time you are in the market.

H. W. CALDWELL & SON CO. LINK-BELT COMPANY, OWNER
Dallas, Texas, 709 Main Street—Chicago, 17th Street and Western Ave.
New York, Woolworth Bldg.

CALDWELL





The PRICE PYROMETER

—Clay plants appreciate Price Pyrometers as messengers of unfailing service.
—Accuracy assured by Price built in workmanship.
—Errors due to unequal length of leads from different couples to instrument eliminated by high internal resistance.
—Indicating and recording for as many as twelve temperatures. A robust instrument well adapted to withstand rough high temperature work.

We maintain a corps of Engineers constantly at your service. Let us hear from you now.

The Price Electric Company
Under the Management of H. A. Deiters
12369 Euclid Ave.
CLEVELAND, OHIO

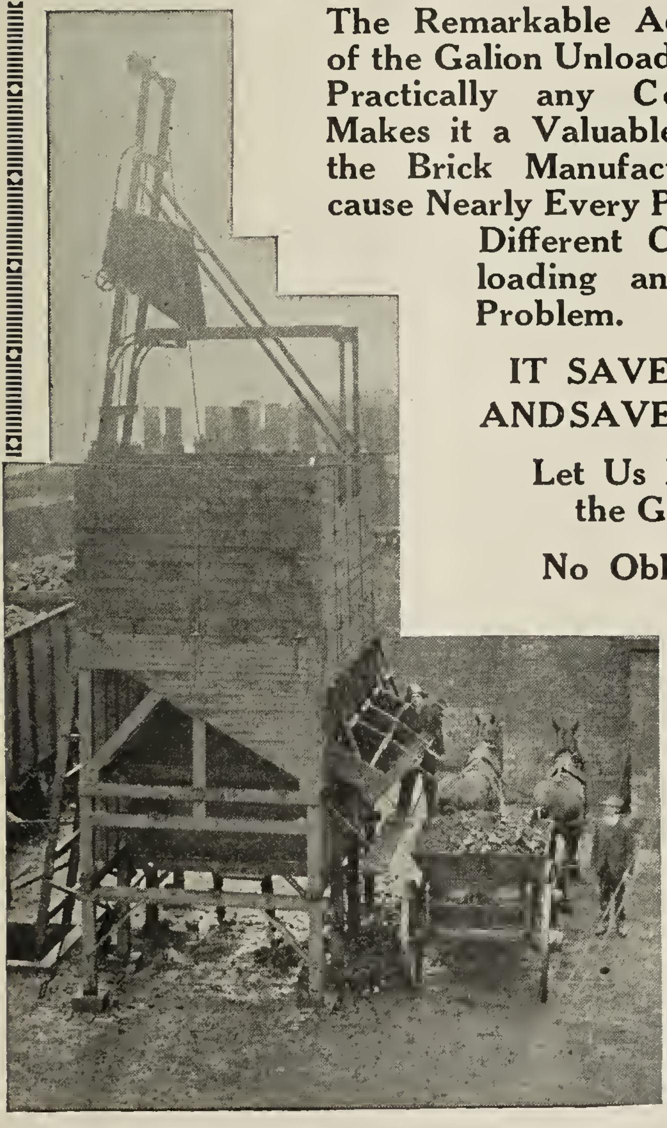
Adaptability

The Remarkable Adaptability of the Galion Unloader to meet Practically any Conditions Makes it a Valuable Asset to the Brick Manufacturer, Because Nearly Every Plant Has a Different Coal Unloading and Storing Problem.

IT SAVES TIME AND SAVES MONEY

Let Us Explain the Galion

No Obligation



The
GALION
Iron Works
& Mfg. Co.

Galion,
Ohio

Announcement

The American Dressler Tunnel Kilns, Inc., will have a message for the clay products industry in the near future which will be of considerable interest.

The message will appear in this paper at the earliest possible moment. In the meantime we are, as usual, ready to serve you.

American Dressler Tunnel Kilns, Inc.
1740 East 12th St. CLEVELAND

Dryer, Transfer and Clay Cars,
with Flexible Bearings.
Switches, Turntables and Track.

THE CHASE FOUNDRY & MFG. CO.
COLUMBUS, OHIO

CHASE

CAUCASIAN
OXIDE MANGANESE
Powdered—Granular
For Speckled Effects

PRECIPITATE
CARBONATE BARIUM
For Prevention of Scum
Thereby Producing
Deeper and Richer
Color

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Trenton
New Orleans
Pittsburgh

Kansas City
Cleveland
San Francisco

Questions and Answers

Best Authorities in Every Clay Working Branch Are Called Into Consultation—Their Advice Is Free to You, Thru These Columns

Address all communications intended for this department to "Editor Questions and Answers, care of Brick and Clay Record," Chicago

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BUILDING A DOWN-DRAFT KILN

1,068. *Missouri—We are figuring on building a 32 foot round down-draft kiln and would appreciate your opinion as to the most successful down-draft kilns.*

Would you suggest individual stacks or one stack for two kilns and what floor plan would be the best for common brick? Where would you suggest for the writer to visit to get these new ideas?

It is our opinion that a thoroly perforated floor is the best. This gives you the maximum draft possible, and if at any stage of the burning you have more draft than you need, it is easy to damper at the stack. If the construction of your floor does not give you the draft that you desire, it is hard to increase it unless you use some type of fan or blower, and this addition always increases the cost. With the thoroly perforated floor, the small flues are built ordinarily about nine inches wide parallel thruout the kiln and nine inch walls or possibly 13 inch walls placed between each flue to support the floor brick. These feather flues as they are called feed into a large flue which runs across the kiln thru the center. The best construction we believe is to have a flue run from the center of the kiln connecting with this cross flue to the stack. This last flue should not have any direct connection with the body of the kiln, that is, there should not be any floor brick directly connecting to this flue. This is to prevent any short circuit from the fire boxes closest to the stack.

We believe that this description and the illustrations shown on pages 76 and 77 of the 1922 Clay Products Cyclopedia will be of value to you. The 1923 edition of the Cyclopedia will contain a number of successful floor plans used by various manufacturers.

The construction of this perforated floor costs more than does a solid floor. In some cases, solid floors have been successful, and therefore, operators of that type consider it the only one to use. There are several variations of solid floor kilns. In some there are flues built in a radial or fan shape from the center of the kiln. All pull to the center or well hole built somewhat like a cistern. From this cistern or well hole there is a flue running to the stack. Holes are provided at various points in the floor to radial flues and thence to the flue leading to the stack. The principal objection to solid floors or any type of floor that does not provide holes at close intervals is that the distribution of the products of combustion is not uniform, and therefore, the resultant burn and the color of the ware is not uniform.

We believe that the individual stacks for each kiln or one stack for the two kilns is proper if the double stack has dampers which are sufficiently tight to shut off the draft from the kiln which is idle. The better construction for a stack serving two kilns is to have a partition wall built either for the entire height of the stack or at least for 15 feet from the ground.

We believe that the best city for you to visit to obtain further information on these points is St. Louis. You will find there the Hydraulic-Press Brick Co., which company makes face and common brick, and several fire brick plants

If Marked **BREWER** It Is Good

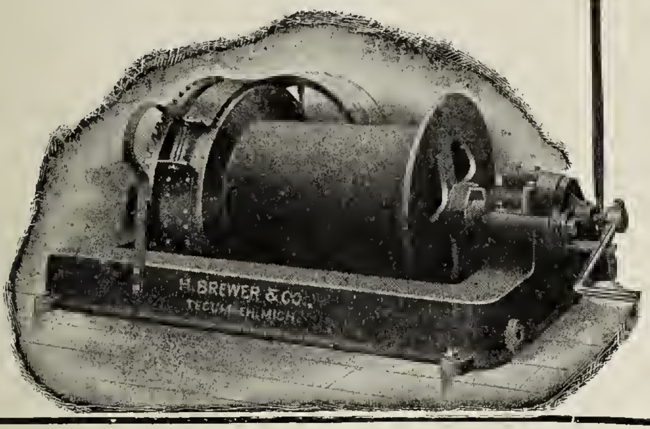
Clay Working Machinery

Block, Brick and Tile Machines
Pug Mills
Crushers
Granulators
Feeders
Disintegrators
Dry Pans
Cutters
Hoists, etc.

Free Engineering and Clay Tests

Brewer engineering service is available without charge or obligation. Competent men will give you best advice, look over your plant and make suggestions for any needed improvements. Take advantage of this free service. Send for Brewer catalog.

H. Brewer & Company Box 25 Tecumseh, Mich.



Simple, Strong, Safe

There's the story of a Caldwell Tubular Tower. It is so simple that you can erect it yourself. It is so strong that it will endure cyclones and tornadoes. It conforms strictly with approved engineering principles. The cost is moderate.

If you want these qualities in a tower, equip yourself with a Caldwell Tubular.

Send for Catalog

W. E. Caldwell Co.
Incorporated
2380 Brook Street
Louisville, Ky.

Caldwell TANKS AND TOWERS

Made for maximum service not merely the average

TRADE JENKINS MARK
Jenkins Bros

Pump Valves For All Requirements

In Jenkins Pump Valves, pure rubber is compounded with ingredients so selected that each resulting composition is suited exactly to a specific purpose.

The most commonly used compounds are: No. 80 for hot water, above 180 deg.; No. 93 for hot water below 180 deg.; No. 94 for cold water.

Send for descriptive folder giving various compounds of Jenkins Pump Valves

JENKINS BROS.

80 White St. . . . . New York
524 Atlantic Ave. . . . . Boston
133 No. Seventh St. . . . . Philadelphia
646 Washington Blvd. . . . . Chicago

Always marked with the "Diamond"

Jenkins Valves

SINCE 1864

2830-J

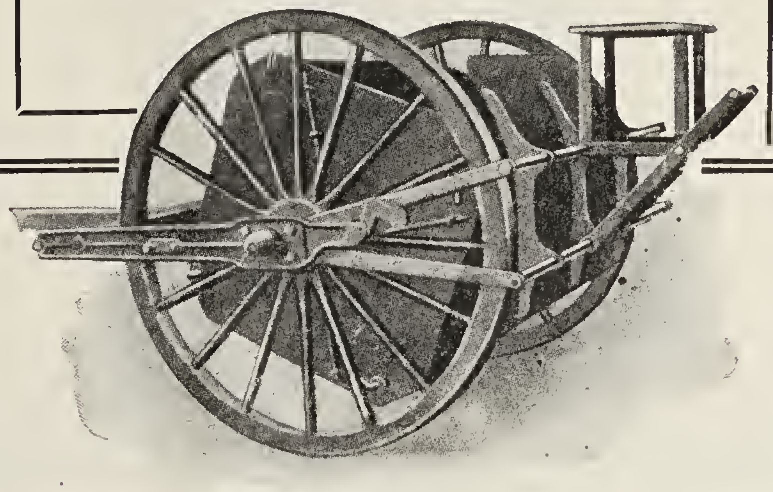
Gathers Clay at ½ Former Cost

The FERNHOLTZ CLAY and SHALE GATHERER is the most efficient known to-day to gather shale and clay.

Time and tonnage tests taken in brick, tile, and pottery plants thruout the country have established our slogan of "gathers clay at one-half former cost."

Write For Details of Savings Possible

Fernholtz Brick Machinery Company
ST. LOUIS, MO.



that will show you good kiln construction. You will also find some up-draft kilns used in building brick plants that might be of value to you. One plant that we would surely visit would be the Continental (Mo.) Brick Co. This is on the outskirts of St. Louis and easily reached.

One important point that is necessary in the construction of a down-draft kiln is to build the several flues and fire boxes of the proper area. We believe that the Clay Products Cyclopedia covers this point. You will also find on page 178 of the Cyclopedia a method of figuring the brick necessary for the crown of your kiln.

* * *

CORRUGATIONS IN AUGER MACHINE BARREL

1,069. *Kentucky—What is the accepted theory regarding the corrugations in the barrel of an auger machine? Should the barrel be smooth with corrugations running lengthwise, permitting the dirt to slide down the barrel as the augur turns; or, should it be rough with corrugations running both ways, permitting no dirt whatever to slide along the barrel?*

The clay in and around an auger tends to revolve with the auger if the barrel is smooth. This would reduce production and increase tendency toward lamination. Corrugations are placed lengthwise in the barrel to break up these tendencies.

Augers should be a close fit in the barrel. If there is too much space and much resistance at the die, the clay along this space will tend to feed backwards. That is the reason many machines have a force feed at the hopper.

Corrugations running both ways in a barrel are not used very much according to our knowledge. It would seem that this would tend to create too much resistance to the flow of clay toward the die. There would be a friction along the surface of the barrel which would increase the power and decrease the production.

This question was submitted to a machinery manufacturer of Ohio who writes as follows:

"The writer believes it will depend largely upon local conditions, and by this we mean the kind of clay or raw material, the type of clay products made, and also the kind of dies and augers used.

"We have customers who claim that they obtain better results by using on their auger machine a nozzle having ribs running lengthwise. We also have customers who claim they have proven to their own satisfaction that this type of nozzle is not suitable for their requirements, and, therefore, use a nozzle having cross ribs which sometimes are called the checkerboard type.

"We believe this is one of the many questions which can be answered to better advantage if all local conditions have been investigated."

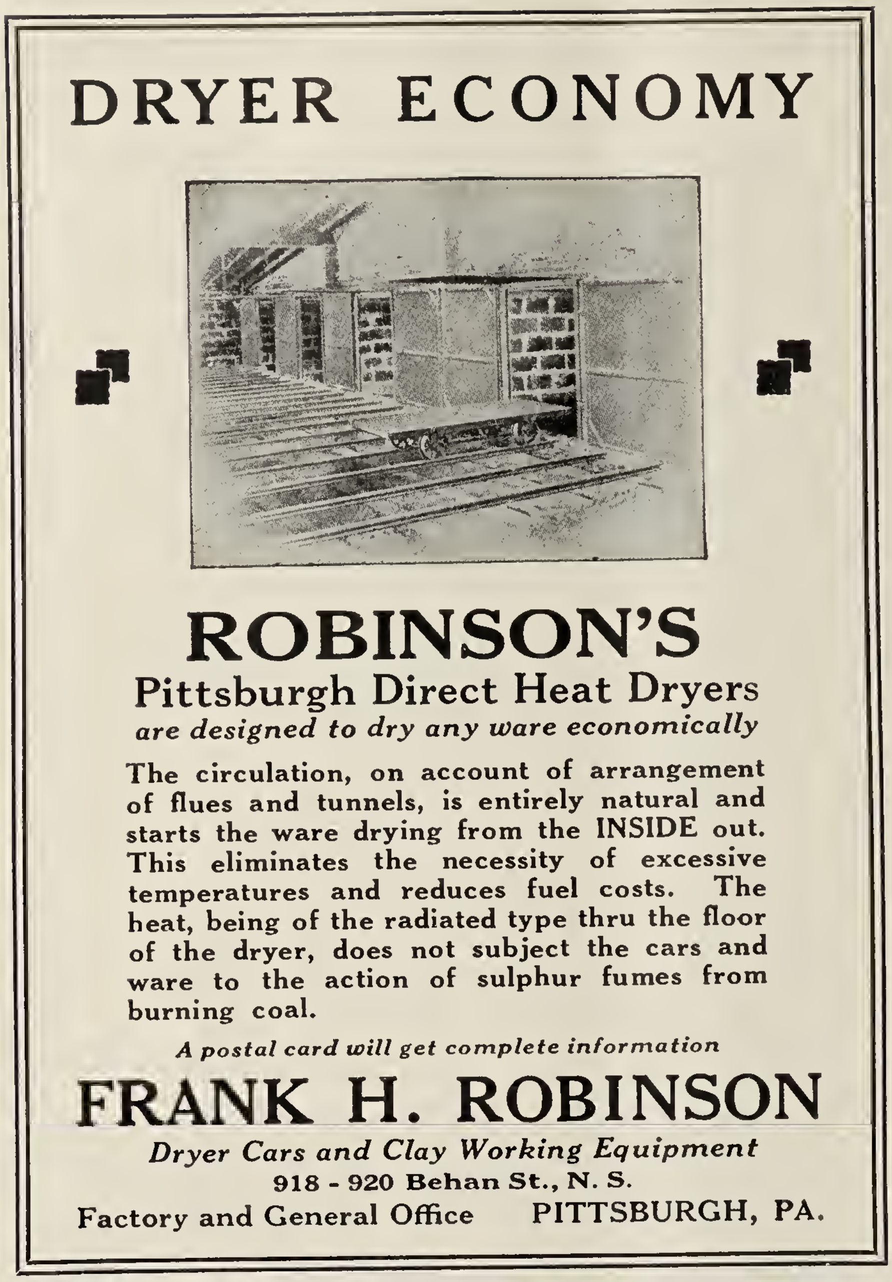
Another Ohio equipment manufacturer states:

"It is a settled fact that where clay inside the cylinder of an auger machine can be prevented from turning around with the auger, the auger will force it forward ahead of the blade of the auger. If the clay turns around with the auger, it will not go forward.

"In practice it is possible to obtain from 14 to 75 per cent. efficiency from an auger forcing clay thru a die, depending upon how much the clay can be prevented from turning around with the auger or escaping backward between the auger and the inside walls of the cylinder surrounding it.

"Any movement of the clay in direct contact with the inside walls of the clay cylinder is always around the cylinder with the auger or backwards away from the die and towards the hopper, or both and anything that can be done to prevent the movement of clay in those directions will raise the efficiency of the augers.

"Of course the correct angle or pitch of auger blades for the service intended, must also be found to secure highest efficiency.


DRYER ECONOMY

ROBINSON'S
Pittsburgh Direct Heat Dryers
are designed to dry any ware economically

The circulation, on account of arrangement of flues and tunnels, is entirely natural and starts the ware drying from the INSIDE out. This eliminates the necessity of excessive temperatures and reduces fuel costs. The heat, being of the radiated type thru the floor of the dryer, does not subject the cars and ware to the action of sulphur fumes from burning coal.

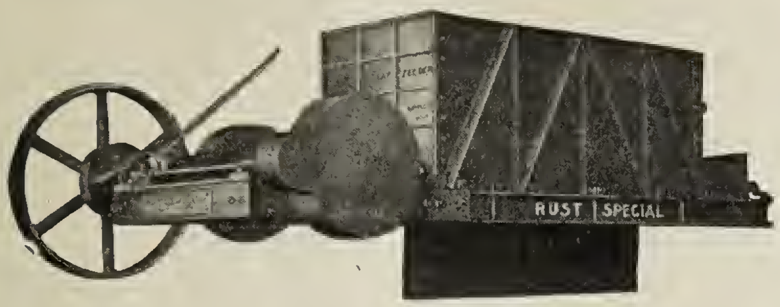
A postal card will get complete information

FRANK H. ROBINSON
Dryer Cars and Clay Working Equipment
918 - 920 Behan St., N. S.
Factory and General Office PITTSBURGH, PA.

HY-GRADE MANGANESE CO.
WOODSTOCK, VA.

Miner and Grinders

Especially Prepared for Brick Making



Improve Your Mix
with the

MARION "RUST SPECIAL" Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing Rust Feeder and full line of Marion clay plant equipment.

Marion Machine Foundry & Supply Co.
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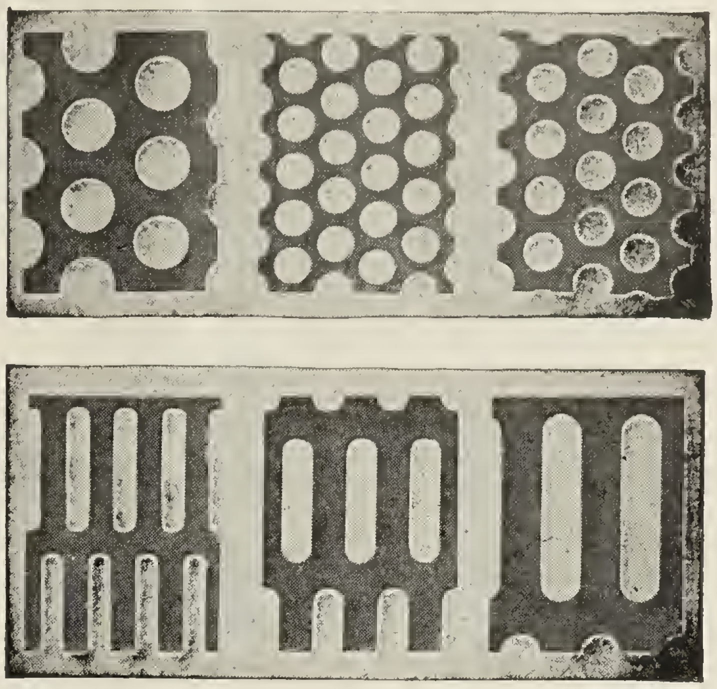
MARION, INDIANA

Perforated Steel Screens



For Screening Clay, Shale, Sand, Gravel, Stone and Cement

All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

Sheets furnished flat or rolled to shape for revolving screens.

THE HARRINGTON & KING PERFORATING CO.
635 N. Union Ave., Chicago, Ill.
NEW YORK OFFICE: 114 Liberty St.

"Paid for Itself in One Year"

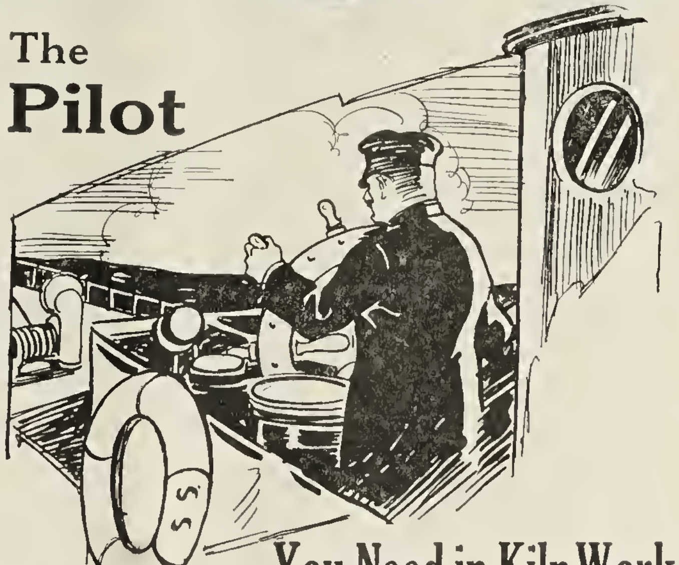
Read what Mr. L. S. Collins, General Manager of the Los Angeles Brick Co., says of their Bay City Excavator:

"Concerning the Bay City Excavator we installed last year, beg to advise we are much pleased with the action of the machine. The saving in handling clay is quite considerable. In fact we find that the MACHINE HAS PAID FOR ITSELF SINCE WE INSTALLED IT. We recommend it very highly to any manufacturer wishing to handle enough clay to make 100,000 brick a day."

Send us your clay pit data and we will submit an estimate of savings possible with a Bay City.

THE BAY CITY DREDGE WORKS
BAY CITY, MICH.

The
Pilot



You Need in Kiln Work

Guess work and chances are eliminated the moment the pilot steps on the bridge. *A carefully charted course is rigidly followed.*
You too—in your kiln work—can secure the benefits of following a carefully charted course. Before each burn, "map out your temperature route" to pilot your burners.
Avoid the shoals of temperature variations. Eliminate loss of time and waste of fuel. How you can do this through the installation of Thwing Pyrometers will be gladly explained upon request.

THWING INSTRUMENT COMPANY
3347 Lancaster Ave., PHILADELPHIA, U. S. A.

Thwing PYROMETERS

131

"MINSTER"
INDUSTRIAL LOCOMOTIVES

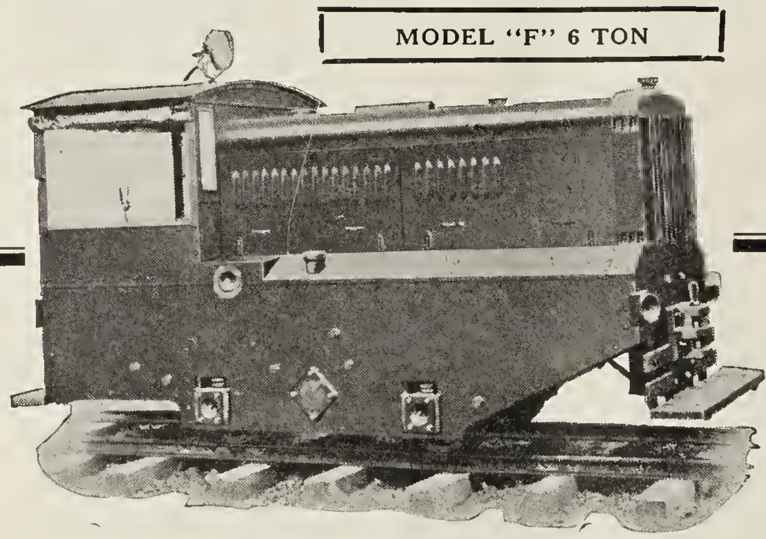
The Model "F" 6-ton Minster Locomotive has proven itself to be the most practical haulage unit for clay plant use, saving time and labor, and giving uninterrupted service day in and day out.

Made in 2 to 8 ton capacities.

Write for catalog.

The Industrial Equipment Company
510-512 Ohio St. MINSTER, OHIO
Eastern and Export Department:
The Herbert Crapster Co., Inc., 1 Madison Ave., New York City

MODEL "F" 6 TON



ATLANTA, GA BALTIMORE, MD. BOSTON DETROIT SAN FRANCISCO ST LOUIS, MO TORONTO WINNIPEG, MAN KANSAS CITY, MO CLEVELAND CHICAGO CHARLOTTE, N C. NEW YORK CITY MINNEAPOLIS MONTREAL PHILADELPHIA PITTSBURGH, PA

MORSE Silent Chain Drives are 98.6% efficient for small or large drives. No worry about belt trouble, slippage of power and loss of production where Morse Chain Drives are installed.

Write us if you have a transmission problem. We give engineering service without any obligation.

Drop a Card to the Nearest Morse Engineer

MORSE CHAIN CO.
Largest Manufacturers of Silent Chains in the World
ITHACA, NEW YORK

"From the above it may be readily understood that in the majority of cases it is necessary to limit the clearance space between auger and cylinder walls and if possible, retain a thin coating of clay on the walls of the cylinder. Where this can be accomplished, the cylinder will remain rough and the augers will polish as they should.

"This is a good theory and sound practice and is given for the benefit of those who are studying the subject."

Here is the viewpoint of still another Ohio manufacturer:

"The liners or the barrel immediately behind the expressing screw itself, or the tip, whatever you may want to call it, should have corrugations longitudinally and laterally. The longitudinal corrugations keep the material from turning without the knives. Transverse corrugations keep the material from flowing backwards. These corrugations need not be very high, because the higher they are the greater the tendency for the material to slip back as the augers and knives wear. The configuration of the barrel immediately surrounding the expressing screw should be at right angles to the pitch of the auger, that is, on an angle, which is exactly opposite to the angle of the auger, all of which you will readily understand."

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

SNYDER TOURING NORTH COUNTRY

W. J. Snyder, president of the Brazil (Ind.) Clay Co., and American Coal & Mining Co., left recently on an extended tour of Alaska and the Arctic circle. He was accompanied by his grandson, Billie Hall, of Indianapolis.

J. E. MADDOCK GOES TO TEXAS COMPANY

James E. Maddock has resigned from the bond department of H. M. Byllesby Co., Chicago, to become vice-president and general manager of the Texas Tile & Fire Brick Co., in which he has acquired a substantial interest. His headquarters will be in San Antonio, Tex.

CLAYTON COMPANY GETS NEW MANAGER

Kendall Burch, for several years associated with the Farley & Loetscher Manufacturing Co., has resigned his position as credit clerk with that firm and accepted a post as secretary, treasurer and general manager of the Clayton (Ia.) Brick & Tile Co. The company has its headquarters in Dubuque and its sand, lime and brick plant is located at Clayton, Ia. It was announced that the concern will in the near future have its own yards in Dubuque for the benefit of local trade.

BLAIR GETS GOOD RECEPTION IN EUROPE

Preparation of material for probable addresses before interested bodies and probably for publication as well, is being considered by Will P. Blair, vice-president of the National Paving Brick Manufacturers' Association, following his recent return from Europe. Mr. Blair went abroad as the official representative of the national association to the International Road Congress, held at Seville, Spain. While abroad he took trips thru France, Belgium, England, Scotland and Holland.

The esteem in which Mr. Blair is held by his associates on the other side was attested to in a complimentary dinner to him by members of the British Paving Brick Association, in London. During his inspection of roads in the British

AN ALL AROUND SAVING

A Russell Kiln installation will bring efficient methods into your plant.

—Saves Labor
—Increases Production
—Makes Uniform Product
—Decreases Fuel Cost

Submit your burning data to our engineers as a basis for an intelligent estimate of the savings possible.

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Russell
TUNNEL KILNS

The Controlling Factors *of* Plant Location

—LABOR
—COAL and WATER or POWER
—RAW MATERIAL
—MARKETS

The Lake Erie, Franklin & Clarion Railroad runs thru the heart of the greatest industrial section in the world, and along its right of way occur some of the richest clay deposits known. In this locality a clay fit for fire brick, face brick, paving brick, etc., is available. Labor, coal or power, raw material and markets are adjacent.
Lake Erie, Franklin & Clarion Railroad connects with New York Central Lines east and west; Pennsylvania Lines east and west; Erie R. R.; Buffalo, Rochester and Pittsburgh R. R.

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NEW YORK BELTING & PACKING CO.
FOUNDED 1846
INCORPORATED 1856

Rubber Goods
for the Clay Industry

Test Special Rubber Belting
Indestructible Conveyor Belting
Elevator Belting
Firo Superheat Sheet Packing
Indestructible Sheet Packing
Cobbs Piston Packing
Steam Hose Water Hose
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NEW YORK BELTING & PACKING CO.
New York Boston Chicago
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THE MINTER SYSTEM

—200 Lbs. Coal per Ton of Ware—

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. Saving first cost of 6 tunnels and equipment.

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

DON'T BUILD BEFORE YOU KNOW

The Minter System Plants are Producing the Cheapest Building Material made in America today.

The Minter System

HOME OFFICE
Albany, Georgia

BRANCH OFFICE
215 Doctors Bldg.
Columbus, Georgia

Isles, which took in several counties in Scotland and England, Mr. Blair was the guest of county engineers and road officials.

G. S. KENNELLEY GOES TO DETROIT

G. S. Kennelley, formerly with the Chicago sales office of the American Refractories Co., has severed connections with that concern to establish the Detroit office of the Interstate Clay Products Co. Mr. Kennelley was formerly with the Interstate Clay Products Co.'s Chicago sales force prior to his connection with the American Refractories Co.

JACOB J. RENKERT SUCCUMBS TO ILLNESS

Jacob J. Renkert, 75, retired brick manufacturer of Canton, Ohio, died July 4 in Mercy Hospital at Canton, following illness of a week. Mr. Renkert suffered a general breakdown June 27 at his home and was removed to a hospital. His condition grew steadily worse.

Born on a farm near Dover, Ohio, Mr. Renkert received his early education in the public schools of that section. He came to Canton 33 years ago and founded the Royal Brick Co., which later was merged with the Metropolitan Brick Co. He retired from business several years ago.

He is survived by one son, O. W. Renkert, Canton, president of the Metropolitan Brick Co., one daughter and seven grandchildren. Mr. Renkert was the father of the late Harry S. Renkert, also an official of the Metropolitan Brick Co. Funeral services were conducted from the home of O. W. Renkert in Canton.

BUYS MUCH NEW EQUIPMENT

According to an announcement the latter part of June by W. B. Neher, general manager of the Alabama Brick & Tile Co., of Albany, Ala., the company is planning immediately to enlarge and improve the plant at Albany in order to increase capacity and thus better take care of the unusually large volume of business that has been enjoyed since the first of the year. Included in the plans is the installation of several thousand dollars worth of new machinery and equipment, which Mr. Neher advises has already been purchased and is now being installed. He states further that from February to May, inclusive, the company did a larger business this year than during the whole of 1922.

ORGANIZE TO DEVELOP MINERAL DEPOSITS

San Diego and Imperial Counties, Cal., and Lower California, Mex., have organized a Chamber of Mines, Oil and Manufactories with Arthur E. Skeats, president, T. G. Nicklin, secretary and Heman C. Cooke, treasurer. The purpose of the chamber is to aid in the development and exploitation of Southern and Lower California's immense and rich deposits of minerals. About 80 leading citizens of the districts affected were present at the organization meeting in San Diego.

GLADDING, McBEAN BUYS TROPICO

The most interesting item of discussion in brick and clay circles in San Francisco, Cal., is the purchase of the Tropico Potteries near Los Angeles by Gladding, McBean & Co. of San Francisco. The reported consideration is $500,000. Gladding, McBean & Co. have been for some time considering locating in that district, and finally concluded to buy outright the major interest in the Tropico Potteries. This gives them control of the valuable mineral deposits of the Tropico company. The latter company was organized in 1921 by R. M. Wotkyns, the present president of the Tropico company and various of his associates in the firm of Stevens & Co. The Tropico Potteries produces architectural terra cotta, vitrified clay sewer pipe, and ornamental faience tile.

Have You a Difficult Belt Problem?

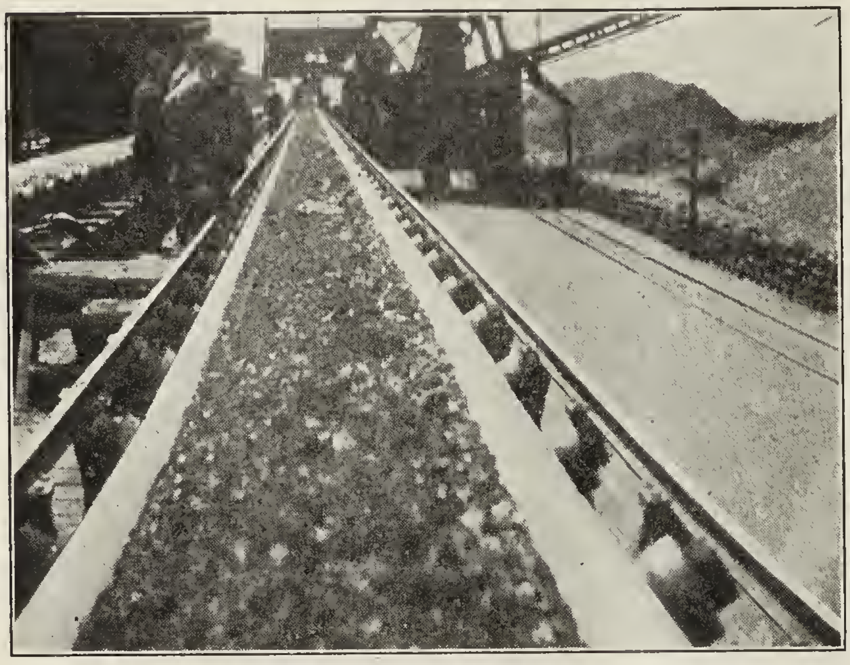
During the past thirty-seven years we have assisted many concerns with their conveying problems.

A saving in conveying costs was the invariable result when our recommendations were followed.

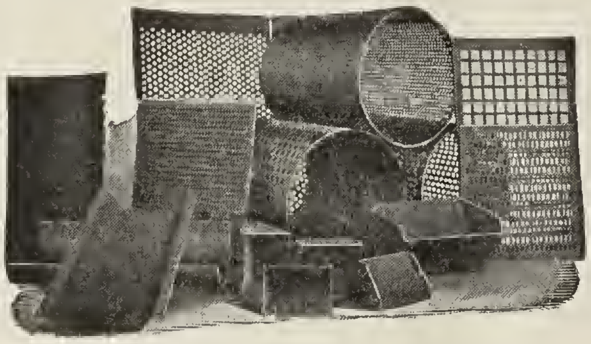
Our belt experts may be of assistance to you.
May we figure on your next conveyor?

Quaker City Rubber Co.

Mfrs. Mechanical Rubber Goods—Auto Tires and Tubes
PHILA. CHICAGO PITTSBURGH NEW YORK



HENDRICK SCREENS
FOR ALL PURPOSES



ELEVATOR BUCKETS
CONVEYOR TROUGH and FLIGHTS
STACKS, TANKS,
GENERAL SHEET and
LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL
PLATE CONSTRUCTION

Ask for your copy of the Perforated Metal Handbook

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CARBONDALE, PA.
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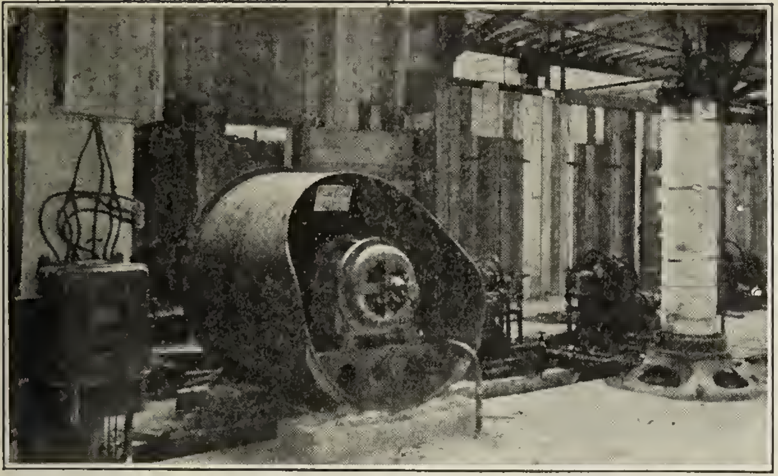
Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

Ask for information regarding T-J System of Burning Oil.

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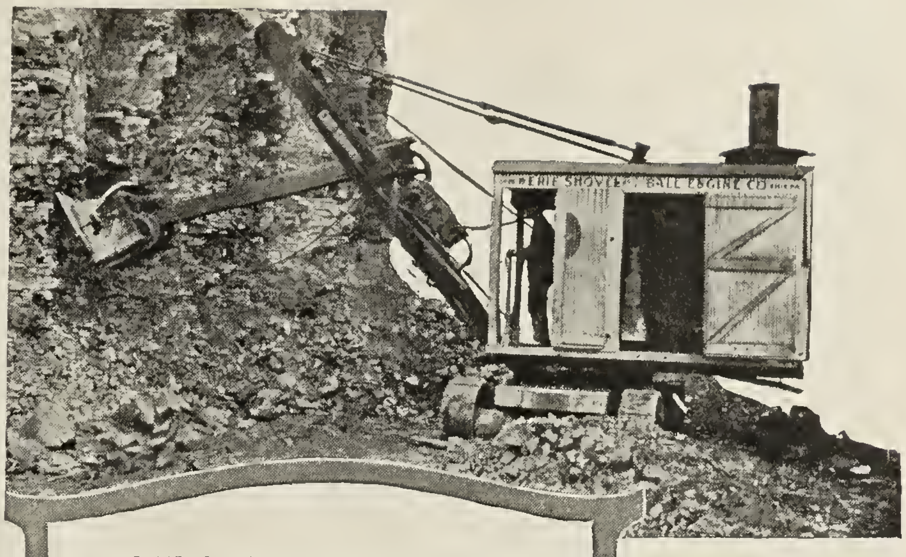
Furnace Engineers Established 1898

PITTSBURGH, PA.

New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis



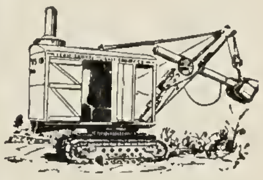
"WITH ONE MAN and one ERIE Shovel, we easily get our 300 cubic yards per day. This is sufficient to take care of the daily output at each of our 3 plants, but we could easily increase this output if necessary. In our opinion, the ERIE is *the* shovel."—*Edw. T. Conley, Sec'y, Bradford Brick and Tile Co., Bradford, Pa.* (Owners of 3 ERIES.)

For larger output than the above—500 to 600 cubic yards per day, or more—it is advisable to use two men on the shovel. But when your plant requirements are not too great an ERIE and one man will serve.

We will be glad to send you data showing just what you can do with the ERIE. Write us.

ERIE STEAM SHOVEL CO.
Formerly Ball Engine Co.,
Erie, Pa., U. S. A.

Builders of ERIE Steam Shovels and Locomotive Cranes

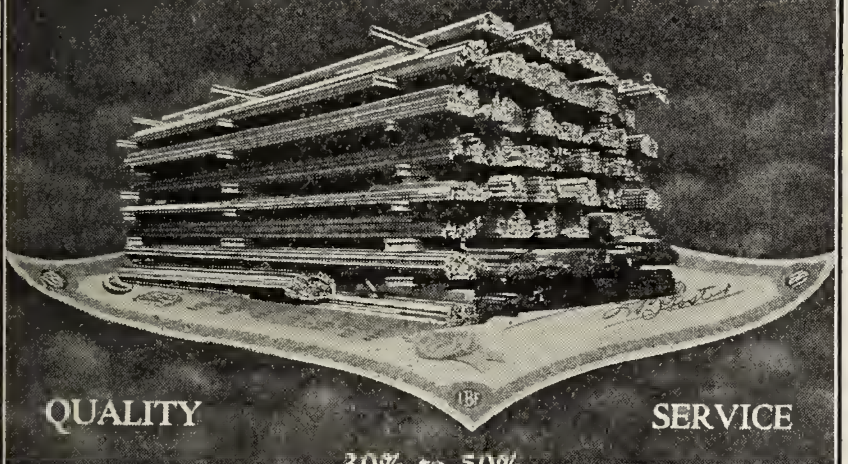


ERIE Shovels can be had with broad tired traction wheels, standard gauge car wheels, or on ERIE lubricated caterpillar type mounting. All interchangeable on the same truck frame.

ERIE Revolving Shovels

ERIE Steam Shovel Co.

GUARANTEED



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30% to 50%
below price of new rails.

Shipped subject to inspection and approval at destination.

1 Ton or 1000

Relaying Rails
New Rails
Frogs
Switches
Bolts Nuts
Etc.

Relaying Rails
New Rails
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25,000 Tons in Stock

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SALEM
Elevator Buckets

The original—Awarded First Premium in 1880—which has many imitations—further endorsed by the many imitations now on the market.

Standard for 40 Years
Made in all types and sizes for every requirement in Regular, Medium, or Extra Heavy Gauges—stock sizes, or Special Sizes made to order.

Send for catalog and price list, or submit specifications for price quotations.

Mullins Body Corp'n
Successors to W. J. Clark Co.
101 Mill St. Salem, Ohio

PLANT BETTERMENT SERVICE

A sincere interest in your problem, together with common sense methods and a broad experience makes this service highly profitable.

Write for details

WALLER CROW, INC.
Engineers
COUNSELLORS IN INDUSTRIAL
OPERATION & FINANCE
327 S LA SALLE STREET
CHICAGO

Any Northwest operator will tell you that he has found in the Northwest Gas Shovel an ease of operation, sturdy reliability and a freedom from unnecessary labor that comes only with gasoline power—features that mean steady operation and economy for the brick plant.

Northwest Engineering Co.
1224 Steger Bldg., Chicago

NORTHWEST
GAS OR ELECTRIC
CRANE
DRAGLINE
SHOVEL

The company also owns deposits in San Bernardino County and mines in Corona and Elsinore. The total valuation is near a million dollars.

WILSON BRICK CO. FOUNDED

Incorporation of the Wilson Brick Co. with a capital of $1,000,000 has been announced. The company will manufacture brick and other clay products. Incorporators are: Wilber A. McCoy, Pittsburgh, Pa.; W. I. N. Lofland, and Frank Jackson, Dover, Del. The Capital Trust Co. of Wilmington, Del., is mentioned as correspondent.

CARLYLE-LABOLD TO BUILD PLANT

The Carlyle-Labold Co. has acquired the Decgans Fire Brick & Clay Co., in Coal Grove, Va., and will erect a plant for the manufacture of common and face brick, a report states.

MAY TAKE MANHOLES FROM BRICK

The bricklayers' union, headed by Peter Shaughnessy, Chicago, Ill., may be deprived of the monopoly which it is alleged the union has on catch basins and manholes.

John J. Sloan, president of the board of local improvements, announced his determination to defy Peter Shaughnessy by permitting construction of catch basins and manholes of concrete rather than brick.

Mr. Sloan believes that 50 per cent. in construction will be saved by destroying the frequent bricklayers' strikes, which are said to have been the bricklayers' union's weapon in throttling competition.

* * *

The Ridgeville (Ind.) Tile & Brick Co. has filed preliminary certificate of dissolution.

TO MAKE TERRE HAUTE FIRE PROOF

A sweeping inspection of the downtown business district, Terra Haute. Ind., which will result in orders being issued for the improvement, removal or razing of all business buildings, residences and structures of other nature, which are considered a detriment to the city, either as a fire hazard or as a menace to health, is now being conducted by city officials. This thoro-going inspection is being made as a result of an investigation started by Fire Chief Miller and he has called upon various state and local authorities to assist him in the elimination of all buildings in the fire limits which endanger the public welfare by fire or unsanitary conditions.

PLAN TO DEVELOP INDIANA BUILDING CODE

The first work of the Indiana State Administrative Building Council should be to take the building rules and regulations of the state industrial board, state board of health and state fire marshal and laws pertaining to building operations and work them into a single code so that builders and property owners may know just what is expected, according to the opinions of council members who had to do with the enacting of the 1923 law which created the new state department.

The advisory committee, of which F. S. Cannon is chairman, was directed to prepare for the meeting to be held July 30, an outline of the program to be followed by the new state department.

The question of where the council would get money to make such a codification as was proposed was raised by Robert F. Daggett, a council member. The information will be sought in the state legal department and state board of accounts office. The legislature appropriated no money for the council.

Confidence!
Faith!

We have faith in our ability to better your kiln operation and results by equipping them with GATES AUTOMATIC STOKERS. We back this up by our willingness to show you any installation we have made.

This is as fair an offer as can be made by anyone, and, we believe, merits your confidence. Come and see them yourself—no matter how skeptical you may be.

The Clay Service Corporation
128 N. Wells Street
CHICAGO

Increase the value of your product by improving the color with

LAVINO
BRAZILIAN MANGANESE

"Best for Face Brick"

Economical
Adaptable to any Clay
Intense Staining Powers
Various Effects Obtainable
Uniform Analytically and Physically

Liberal samples and full information gladly furnished upon request.

E. J. LAVINO and COMPANY
Bullitt Building Philadelphia, Pa.
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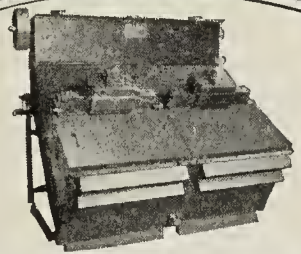

TYPE 31 - Six Foot HUM-MER

HUM-MER
***Electric* SCREEN**
Makes screening and crushing more profitable. Screens any material, wet or dry, from $2\frac{1}{2}''$ opening to minus 200 mesh
Send for Catalogue No. 45-B

THE W. S. TYLER COMPANY
CLEVELAND, OHIO
Manufacturers of Woven Wire Screens and Screening Equipment

BETTER QUALITY WARE
That is the result when Frost Dry Pans are put on the job.
THE FROST MFG. CO.
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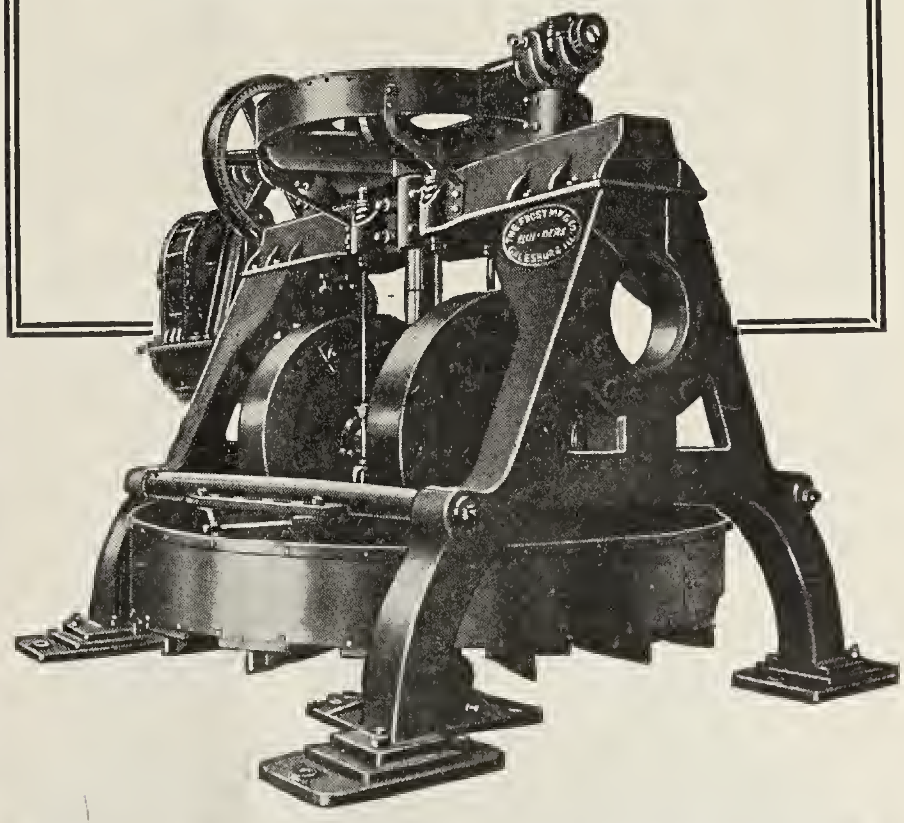


QUALITY ECONOMY SERVICE

Stop Using Wheelbarrows

and the hand shoveling method to feed your dry pans. Labor is scarce and unreliable. With

ROBBINS
Sectional Conveyors

properly arranged, one man will feed your pans better than three or four men can do it by hand shoveling. Give us a chance to solve your labor problems. Reduce your costs and speed up production.

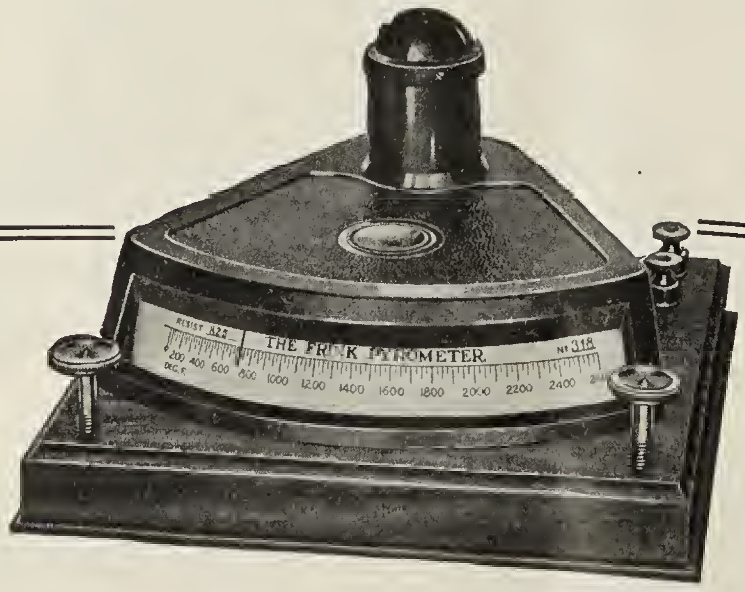
WRITE TODAY

Robbins Machinery & Supply Co.
444 W. Grand Ave. Chicago, U. S. A.
"Machinery for Moving Merchandise"

Cut Your Burning Time
by equipping your kilns
with
FRINK
PYROMETERS

which afford perfect control of all temperatures—saving time and money in the burning and enabling your burners to hold even temperatures, thus improving the quality.

WRITE FOR DETAILS
THE FRINK PYROMETER COMPANY
LANCASTER, OHIO



REORGANIZES STANDARD BRICK CO.

A complete reorganization of the Standard Brick Co., of Crawfordsville, Ind., has been effected, and the plant has been turned over to the stockholders by the receiver, who has been in charge for several months. The Standard Brick Co. has between seven and eight hundred stockholders, many of whom reside in Lafayette and surrounding territory. It enjoyed a flourishing business until financial reverses were experienced. A receiver was appointed and he has been in charge. The plant has been idle.

It is the intention of the stockholders to resume operations shortly. New machinery will be installed and a working force will start the kilns within a short time. A new executive committee which will be in direct charge, is composed of: Charles R. Lane, of Delphi; Charles C. Pyke, of Lafayette; D. Parker Simison, of Romney; Feldin Morin, of Linden, and Thomas H. Stoops, of Connersville.

For the present Charles R. Lane, of Delphi, will assume the active management of the plant and will serve until a permanent manager is appointed.

DUBUQUE COMPANY FORMED

The Clayton Brick & Tile Co. has been incorporated in Dubuque, Ia., with a capital of $250,000, it is said, to manufacture brick, roofing tile and sewer pipe. Incorporators are F. A. Henker, W. H. Meuser and others.

CHICAGO MEN BUY IOWA PLANT

Announcement has been made at Sheffield, Ia., that the Sheffield Shale Tile Co. has been sold to Messrs. Cook and Weber of Chicago. Mr. Cook is president of the National Brick Co. The new owners will manufacture face brick instead of tile and contemplate enlarging the plant, it is reported.

NEW RAIL RATES FOR IOWA

A new schedule of freight rates for brick and tile and all clay products between points in Iowa is in effect. The rates have not been announced by the railroads but those suggested by the state railroad commission have already been attacked by the Chicago, Milwaukee and St. Paul railway as being too low. The railroad is seeking to restrain the commission from enforcing the schedule made in the case of the Goodwin Tile & Brick Co., Des Moines, and others, against the C. M. & St. P. Ry., just filed with the commission.

IOWA SELLING MORE TILE

Tile sales are beginning to look up in Iowa, due partly to road grading and draining projects and partly to reclamation projects, as these indicate the amount of material being used to reclaim swamp and slough lands. The Kunz-Benson-Ochs Land Co. has just completed the tiling and cropping of 520 acres of their 640 acre virgin farm 3½ miles north of Lu Verne. On this farm 180,000 tile ranging in size from five to twelve inches were put into the ground during last fall and this spring. The 250 acres are cropped with corn and flax. The balance of the farm is being properly tiled now and will be ready for another spring. This is the last prairie section in Kossuth County.

FIRE DAMAGES ROOFING TILE PLANT

Fire at Cloverport, Ky., on June 6, practically destroyed a storage house of the Murray Roofing Co., manufactures of tile roofing material, including destruction of one railroad car of material and damage to two others. Loss was around $15,000, insured.

FORM KENTUCKY COMPANY

The Atlas Clay Products Co. of Madisonville, Ky., has been incorporated by E. H. Pennick, N. M. Mitchell and A. F. Fox.

NEBRASKA RAIL RATES REDUCED

The Nebraska state railway commission issued an order establishing joint rates on carload shipments of brick, hollow tile and other clay products transported within the state of Nebraska over two lines of railroads and directing a reduction of rates on brick, to be effective July 16.

N. J. GETS NEW SILICA BRICK PLANT

The Silica Brick & Products Co., Camden, N. J., has been chartered under state laws with a capital of 10,000 shares of stock, no par value, to operate a local plant for the manufacture of high grade silica brick and kindred products. The company is headed by Samuel Bettle, Jr., Edward S. Sharpless and S. Rusling Leap. The last noted represents the company, with office at 506 Market Street, Camden.

ACME BUILDING ANOTHER PLANT

The Acme Shale Brick Co. of Buffalo, N. Y., is at the present time building a large brick and tile plant at Shaleton, near Buffalo. It is said that the plant will be thoroly modern and will be in operation in a few months.

CHEMICAL PLANT CHANGES HANDS

The Barium Reduction Corp., a newly organized company, has purchased the chemical plants, mines and business of the Rollin Chemical Corp. All business including the sale of the company's products will be conducted from its offices in the Borden Bldg., 350 Madison Avenue, New York. The selling agreement between the Clinchfield Products Corp. and the Rollin Chemical Corp., which has been in effect for some time, is now cancelled. The Barium Reduction Corp. maintains its works in South Charlestown, W. Va.

SAYRE & FISHER BEATS STRIKE

Following a six weeks' strike of employes at the plant of the Sayre & Fisher Co., Sayreville, N. J., referred to in the last issue of Brick and Clay Record, the company has reopened its plant with labor from other states and the working force has been added to almost daily. The company has secured a sweeping injunction enjoining the strikers from unlawfully picketing the yard, or from intimidating any men who might attempt to work there, and up to the present time there has been no disorder. Only a fraction of the former working force of 700 operatives has been secured owing to the scarcity of labor. The settlement of the strike with former employes now hinges upon company recognition for the union and officials say that this will not be granted.

LEASES MEADOW BRICK COMPANY

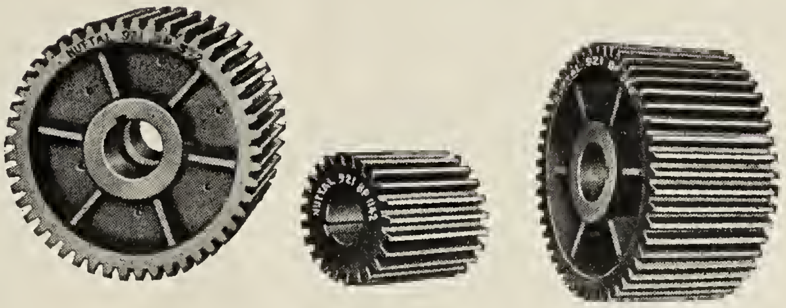
The W. M. Layton Brick Co., of which W. M. Layton is president, has leased the plant of the Meadow Brick Co., Four Oaks, N. C., and will have an output of 40,000 brick per day.

GETS LONG TERM LEASE ON SALES OFFICE

The Gaddis-Harrison Brick Co., of Columbus, Ohio, which has headquarters at 223 East Broad St., has acquired a long time lease with the privilege of purchasing the property in Dayton, Ohio, which has been occupied by the Dayton branch for about five years.

Improvements in the property are now being made in order that an up-to-date sales office might be maintained.

Nuttall



Nuttall Facilities

We can cut spur gears in any material, from ¾-inch minimum to 360 inches maximum diameter, any pitch up to 6-inch.

Bevel Gear Limits—1-inch minimum to 192 inches maximum diameter, any pitch up to 6½-inch.

Let us send you booklets going into details on the subject.

R.D.NUTTALL COMPANY
PITTSBURGH PENNSYLVANIA

Philadelphia Office 430 Land Title Bldg.

Chicago Office 2133 Conway Bldg.

Nuttall

Black 4th Vein **Betty**

Trade Mark Registered United States Patent Office

"Firemen's Delight"

Take This Tip

A careful survey of the coal situation shows that, with the exception of railroads, practically no storing is being done. Consumers are buying as their needs materialize. This indicates to us that a great demand for coal is not far distant, which means—

Shipments will be uncertain, due to the fact that car shortages prevail in some territories even now.

Coal will no longer be purchased at sacrifice prices, which now obtain.

"Black Betty Quality"
"Zimmerman Service"

"Zimmerman Service" puts our policy in a nut shell. "If you favor us with your business during the dull summer months, the fact is not forgotten in the strenuous winter months when you need coal."

Mines Located on the C. & E. I. Railroad at Clinton, Indiana

Zimmerman Coal Company
609 Tribune Building
Long Distance Wabash 9921
Terre Haute, Indiana

MATTHEWS' PLANT STARTS UP

The newly reorganized Columbus Brick & Terra Cotta Co., which took over a plant at Union Furnace, Ohio, has started to manufacture face brick, according to W. T. Matthews, head of the concern. An order has been received by the concern for 180,000 face brick for the New Yuster office building at Fourth and Broad Streets, Columbus.

MARIETTA PLANT EXPANDING

Extensive expansion is contemplated by the Marietta Rustic Co. at its plant in Zanesville, Ohio, officials of the concern have announced. The new unit will be completed within a short time, making the Zanesville plant the largest manufacturer of clay fire logs in the United States. Improvements include erection of another kiln. The clay fire logs are being made entirely by hand with the exception of grinding the clay.

HERRICK SPENDS $4,000,000 FOR ROADS

When L. A. Boulay, the new Ohio Commissioner of Highways and Public Works took charge July 1, he found that not only practically all of the available funds for road construction had been exhausted, but that many of the department heads under L. C. Herrick, the former commissioner, had resigned. Commissioner Herrick awarded contracts during the last few days for 128 miles of improved highways at a cost of slightly more than $4,000,000.

The largest project was the paving with brick of a stretch of 5.736 miles of the Athens-Pomeroy road in Athens county at a cost of $303,866.

FACE BRICK BUSINESS DROPS OFF

A slight falling off in the demand for face brick is reported in Columbus and Central Ohio territory. While shipments are still good on orders booked previously, figuring on new work is not nearly as active as formerly. Face brick manufacturers as a rule are running their plants to capacity but there is beginning to be some uncertainty as to future business. Prices are holding firm at the levels which have prevailed for some time. Face brick sell from $26 to $37.50 f.o.b. plants while common brick are still scarce and are selling at $16.50 to $18.50 delivered on the job. Common brick plants are being operated to capacity.

RAISES CAPACITY 75 TONS DAILY

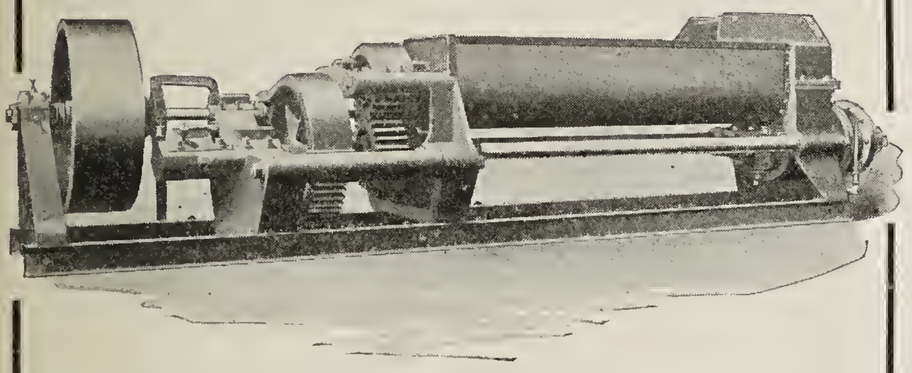
Increasing the production of a brick plant from 50 tons a day to 125 tons a day is the accomplishment of H. A. Hall, recently appointed superintendent of the plant of the Graham Clay Products Co., at Conneaut, Ohio. Mr. Hall has been with this company less than five months and the increase in production in this period is believed to stand well in the forefront of brick plant management.

Not a little of this improvement, in the opinion of Bert J. Graham, president and treasurer of the company, is due to the new policy of the company, which has given its department executives a free hand in operating the business. The Graham Clay Products Co. recently took over the United Brick Co., a 20 kiln project, which had been manufacturing paving brick. One of the first steps was the installation of standard equipment for the manufacture of shale common building brick and hollow tile. The policy of full support of the directors to executives in the different departments was another move. The outlet for the plant is principally in Northern Ohio communities.

Other officers and directors of the company beside Mr. Graham are: O. W. Renkert, vice-president; W. B. Stewart, secretary; E. S. Hansen, R. M. Hanna, directors. Headquarters of the company are at Cleveland.

Can Several Hundred Brickmakers be Wrong?

Several hundred Brickmakers have selected and are now operating Freese Union Machines. Most of these made their selection after investigating the results being obtained on other plants. The selection of this machine by such a large percentage of experienced Brickmakers should mean much to a prospective purchaser of clay-working machinery.



Freese Union Machine

E. M. Freese & Company
Galion, Ohio

Dependable Machinery of Proven Efficiency

Just Off The Press

TWO booklets on the research work of the Central of Georgia "Refractory Possibilities of Some Georgia Clays," and "Washing Tests of Georgia Clays," both by R. T. Stull and G. A. Bole are now ready for distribution and will be mailed on request, free of charge.

Mr. Stull was formerly Supervising Ceramist, U. S. Bureau of Mines, and at present is assistant general industrial agent of Central of Ga. Railroad while Mr. Bole is superintendent, Ceramic Experiment Station, U. S. Bureau of Mines.

The research, the basis of these pamphlets was done in co-operation with the Central of Georgia R. R.

Send for your copies today.

J. M. MALLORY
General Industrial Agent
CENTRAL *of* GEORGIA
RAILWAY COMPANY
233 West Broad Street
SAVANNAH, GA.

AUTOMATIC MOULD-RELEASE DRYER

A Paying Short Cut in Insulator Production

RECEIVES filled moulds and delivers empty moulds at presses.

Delivers conditioned ware close to trimming tables.

Produces ideal condition of ware for trimming — always uniform.

Reduces drying time—the moulds being turned several times a day.

Reduces handling of moulds, keeps them in uniform condition, increases their life and cuts down the number required.

Cuts down labor motion and greatly increases production on presses.

Saves a tremendous amount of floor space.

PROCTOR & SCHWARTZ, Inc.
PHILADELPHIA, PA.

OHIO FAMILY ADDS ANOTHER

The Fredericksburg (Ohio) Mining & Clay Products Co. has obtained a state charter. The company is incorporated for $10,000 and as incorporators are mentioned Paul C. Shaffer, Nina Hilbold, William D. Pence, Willis Bacon and Luke A. Floyd.

NEW COMPANY IN OKLAHOMA

L. V. Brandenberg is reported to be behind a movement to establish a brick plant at Cushing, Okla. It is said that a stock company has been organized with a capital of $25,000. All stock has been sold and the company incorporated under state laws. Construction on the new plant will begin very shortly. As incorporators are mentioned John B. Bellis, Amos Brandenberg, and James M. Dale of Cushing.

GALLANT'S PENNSYLVANIA PLANT BURNS

The brick plant of A. Gallant & Son, St. Louis, Mo., at Hamburg, near Reading, Pa., was recently destroyed by fire with loss estimated in excess of $50,000. Only the office building was saved. The plant has been idle for some time and it is doubtful if it will be rebuilt for the present.

NEW FIRE CLAY COMPANY

Incorporation of the Cumberland Valley Fire Clay Co. has been announced. The company is incorporated for $100,000 and will manufacture fire clay products. As incorporators are given, Arch E. Craig, R. S. Flannegin, Imperial, Pa.; W. C. O'Reilly, Jr., Pittsburgh, Pa. The location of the company is not given.

UPHOLDS BRICK RATE COMPLAINTS

The Public Service Commission, Pennsylvania, has upheld the complaints of manufacturers at Harrisburg and Steelton regarding brick rates charged by the Pennsylvania Railroad from Mount Union, Vandyke, Hawthorne and vicinity. The road has been ordered to publish a tariff schedule providing for a rate of $1.95 per 2,000 pounds on brick and articles taking brick rates.

LANCASTER EXPANDING PLANT

Due to the increasing demand for its clay products machinery the Lancaster (Pa.) Iron Works is making extensive additions to its facilities at Lancaster. Two additions are being made to the machine shop, one 54x106 feet and the other 54x144 feet, the latter to be used as an erecting shop. The capacity of the company's foundry has also been doubled.

LIGHTNING STRIKES PLANT FOUR TIMES

Officials of the Southern Brick Co., Bristol, Tenn., are beginning to wonder if Nature has some sort of a grudge against them. Four different times in the last few months the company's plant at Bristol has been struck and damaged by lightning, and in one instance an employe was killed, James Deckard, employed as a night watchman. Twice the lightning bolts have caused fires that resulted in some damage. The latest incident was during the latter part of June. Three of the bolts have struck the motor room, while the other struck the plant proper.

NEW SEWER PIPE COMPANY

The Eastern Sewer Pipe & Brick Co., with a capital of $350,000, has been incorporated at Martinsburg, W. Va. F. Vernon Aler, of Martinsburg, is named as president, and Martin J. Beach of the Calvert Building, Baltimore, Md., is secretary of the company. The company will manufacture sewer pipe, hollow tile, building and paving brick.

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

Manufacturers Plus Dealers

WE RECENTLY READ a book which told how manufacturers in a certain industry have been and are spending large sums of money investigating methods employed by the merchants who retail their product. Moreover, these manufacturers actually send salesmen into the field to help the dealer distribute their product.

In most cases today, the manufacturer does not sell his own product direct to the consumer, nevertheless he does make it his business to find out all he can about the selling problems of his distributors. Just visit your local hardware merchant and inquire of the cooperation he receives from manufacturers and jobbers from whom he purchases.

Is the clay manufacturer giving similar cooperation? We do not think so. In fact, we are of the opinion that the clay manufacturer is not cognizant of his responsibilities to his dealers. Instead of taking the initiative and developing a proper and practical dealer-manufacturer cooperative program, the manufacturer is asking the dealer what he (the dealer) thinks he could do to push the distribution of clay products. This attitude is entirely a mistaken and shortsighted one.

When a clay products manufacturer decides to use the dealer as a distributing medium he cannot expect to sit back and wait for dealer orders to flock in. It isn't up to the dealer to go to the manufacturer with a plan for mutual cooperation in the distribution of clay products. It is clearly the manufacturer's duty to work out plant and selling campaigns, because he is the man most interested.

The dealer in the abstract sense, is a composite of many separate firms—good, bad and indifferent, each in a community with many characteristics of similarity and some points of difference. The dealer in one city may be farther behind in sales ideas and methods than his brother in a neighboring town.

The clay products manufacturer deals with hundreds of dealers, hence he knows (he does not usually but he should) the problems of each and the good ideas each has used in selling clay products. His experience with many dealers enables him to give the individual firm a broader viewpoint and the cream of the merchandising methods used generally. The manufacturer should lead the dealer.

So much has been said about a competing product in these columns on this subject that we purposely avoid mentioning it again this time. However, the trend of the times is dealer cooperation, and while there has been some activity on the part of clay products associations to improve the merchandising methods of their industry this work has not gone very far.

If your product is sold by dealers and it is Brick and Clay Record's opinion that this is the ideal and modern way of selling it, it is up to you to devise ways and means of cooperating with your dealer 100 per cent.

You should not consider your product sold until it is in the hands of the ultimate consumer. Don't leave it up to the dealer!

* * *

How Well Known Is Brick?

"THE AVERAGE LIFE of a brick building is 35 years and of stone or concrete 50 to 100 years." This bit of information was printed in a number of daily newspapers and other periodicals including a recent issue of a well known architectural journal. Not much of an item to be sure—barely three agate lines in a newspaper column—but the lesson it carries for the brick manufacturer speaks volumes. Despite the fact that this statement is absolutely wrong and can probably be proven so by many brick manufacturers, it was apparently accepted in good faith and as correct by newspapers and even an architectural paper of high standing, that presumably should know something about these things.

One is constrained to think that evidently brick and its good qualities are not so well known as many a manufacturer thinks, even admitting that the item is "enemy propaganda." If brick had been properly advertised and popularized, such an item would certainly never have passed the desk of any honest managing editor.

However, such things must be expected as long as a billion dollar industry is satisfied to spend less money for advertising than many individual manufacturers spend annually for publicity.

* * *

What Will Happen to Building

GUESSING BUSINESS prospects seems to be a favorite sport these days. With our old time barometers, the stock market, car loadings, and so forth, failing to register normally guessing is all that can be done in the way of a business forecast.

But when guesses are given the publicity, emphasis and unqualified advice that have characterized recent statements of some persons with a large following, we believe that artificial depression is very apt to result.

In the building industry the shortage of mechanics, together with the usual lowered efficiency which accompanies a labor shortage, has lifted cost to the point where architects' estimates have become too high for prospective builders to decide to go ahead. Moreover, banks have tightened the lines on loans.

Perhaps it is well for the bottom to fall out of building for a few weeks so that construction can catch up and costs can be made more stable. But to advocate complete suspension means damming up building demand to a point where it will cause another wave of record activity. This process would be a never ending cycle.

But what are the real prospects for the future in construction? Our guess, based upon visits to many sections of the country, is that we will experience a slump, the end of which will come when stable conditions again return to the building industry. When construction has caught up and the mechanic situation eases, we believe building will go ahead again. We look for September to bring back renewed construction activity, not as extensive as this spring but moderate enough for fair activity.

Summer Meeting Program Attractive

American Ceramic Society to Visit Plants in Detroit and Vicinity—Meeting Offers Something of Interest for Every Branch of Ceramics

A TRIP which threatens to rival in interest if not in scenic beauty the one taken last year on the occasion of the American Ceramic Society summer meeting, is scheduled for the 1923 summer meeting. This trip will embrace visits to ceramic plants and other establishments in the vicinity of Detroit and Toledo. It offers to those who will make the trip an opportunity to visit ceramic plants of practically every description which are manufacturing with modern and up-to-date methods and equipment. The trip will give the members an opportunity to combine business with pleasure on the visits to these establishments. On the list of plants to be visited are companies manufacturing glass house refractories; glass bottles, window and plate glass, with modern machine methods; porcelain spark plug cores and assembled plugs; enameled steel and ironware; common brick; grinding wheels; art pottery and automobiles.

Pleasure Trips Scheduled

Characteristic of the spirit of the summer meetings everything will not be entirely business. Some beautiful pleasure trips have been scheduled and these will eliminate any chance of time becoming dull. One of these pleasure trips will be a midnight excursion on the Detroit River and Lake St. Clair. According to the announcement issued from the A. C. S. offices, "more tonnage travels on the Detroit River than enters the Metropolitan harbor, more than moves from New York, London, Hong Kong and Liverpool combined. The lake trips from Detroit are unsurpassed in scenery and comfort.

Detroit Will Be Headquarters

Another treat awaiting delegates is a visit to Belle Isle, which is famous the world over as a park of beauty, refinement and educational opportunities. Within its confines there is an extensive aquarium, horticultural and zoological collections. In this park, concerts, boating, swimming, motoring and casinos are available for the pleasure seekers.

The summer meeting party will make its headquarters in Toledo, Ohio, at the Secor Hotel, on August 8. In Detroit, on August 8, 9, 10, and 11 the Wolverine Hotel will be the official convention hostelry.

The complete itinerary of the trip as issued by the A. C. S. offices follows:

Itinerary

AUGUST 8—8. A. M.—Hotel Secor, Toledo; Dr. H. W. Hess and A. S. Zopfi, committee in charge.

12 M.—Complimentary lunch at the Toledo Yacht Club.

7.25 P. M.—Leave on Michigan Central train 306.

9.00 P. M.—Arrive Detroit (dinner enroute). F. H. Riddle, Mrs. W. B. Stratton, H. F. Royal, H. S. McMillan, Jos. Hoehl, J. R. Kempf, committee in charge.

AUGUST 9—9 A. M.—Chartered bus to Ford Motor Co. (experimental continuous pour plate glass plant) and Champion Porcelain Co. (Dressler Tunnel Kiln operating at cone 18). Complimentary luncheon at Champion's.

2:00 P. M.—Trips chosen by delegates. Porcelain Enameling and Mfg. Co., Detroit Stove Works, Wolverine Porcelain Enameling Co., Pewabic Pottery Co., Detroit Brick Plants.

7.30 P. M.—Boat ride. Dancing on deck.

AUGUST 10—8.10 A. M.—Leave by special cars for Flint. T. G. McDougal, P. D. Helser and J. S. McDowell, committee in charge. A. C. Spark Plug Co. (complete production and assembling of plugs), novel tunnel kiln operating at high temperatures. Buick Motor Co.

8.00 P. M.—Dinner with entertainment and dancing, Hotel Wolverine.

AUGUST 11—9.00 A. M.—Special bus to Detroit Star Grinding Wheel Co. River Rouge plants of Ford Motor Co. The Ford steel plants. Ford new plate glass plant.

Week End—Lake trips as shall be chosen by the delegates.

Rates—Hotel Wolverine, $3 to $6, single rooms; $5 to $8, double room.

Those responsible for the arranging of this program are to be commended for a trip which promises something of interest to everyone of the seven divisions of the society. A good crowd is expected and to make things easier for those who are making the arrangements, members are urged to signify their intentions of going and make their reservations as soon as possible.

⁂

REFRACTORIES OPERATIVES INSTITUTE

Branches of the Refractories Operatives Institute have been established in Southern Ohio and Kentucky, in Western and Central Pennsylvania and in Maryland. These branches hold separate meetings in which the plant men discuss subjects that have a practical bearing on the manufacture of fire brick. At the meeting of the Kentucky-Southern Ohio Branch, which was held at Haldeman, Ky., on May 29, the following subjects were covered: hand molding, with special reference to the use of the same cap again and again, thereby avoiding the chance of the sand or oil crack in the tile; drying large and thin tile, with reference to the method of leaning thin tile on their edge in setting them in kilns; methods of drying difficult shapes in other industries, such as in architectural terra cotta plants; making nine inch mud brick without using mullers; hand made brick made with an auger machine—this being an article previously published in Brick and Clay Record. 17 members of the Institute were present at the meeting.

⁂

75 NEW CLAY COMPANIES IN SOUTH

According to information received at the Georgia state capital in Atlanta, announcement was made during the first six months of 1923 in the various southern states of the formation of nearly 75 new companies for the establishment in that district of brick manufacturing or clayworking plants, believed to be the largest number of such companies formed in the section over a half year period in the history of the brick industry in the South. Of these concerns many have already established new plants in the South, of which announcement was made from time to time in Brick and Clay Record, and there are several other such plants in early prospect.

⁂

RESEARCH FELLOWSHIPS IN CERAMICS

In cooperation with the U. S. Bureau of Mines the Ohio State University offers three fellowships in the Engineering

Experiment Station. These fellowships are open to college graduates who have had sufficient training in ceramics, metallurgy or chemistry to carry on the particular research assigned. The stipend is $750 for a period of nine months, starting September 1, 1923.

Fellows may register in the graduate school and become candidates for advanced degrees. Substantially the entire time of the incumbent shall be devoted to research work in the field of ceramics. The purpose of such work is to undertake the solution of definite problems confronting the ceramic industries.

Since training along many lines can be brought to bear upon ceramic problems and since the problems confronting the industries are many and varied, the problem assigned will depend largely upon the qualification of the fellow.

Applicants should apply to the Dean of the Engineering Experiment Station or to the superintendent of the Ceramic Station, U. S. Bureau of Mines, for information.

Herbert Hoover Approves of Trade Associations

A REMARKABLE BOOK—a book, indeed, that may mark the beginning of a new epoch in the history of trade associations in America has just been completed by officials of the Department of Commerce, working under the direction of Secretary Herbert Hoover.

Within the limits of its 368 pages, 16 illuminating chapters, and a series of exhaustive appendixes, this handy volume compresses into compact form an extraordinarily comprehensive description and exposition of proper and timely trade association purposes, activities, and possibilities, that must forever answer every skeptic or opponent of their present usefulness and their ultimate robust development.

In an introductory note, the editors say: "This volume is the first attempt on the part of the Department of Commerce to describe the constructive activities of trade associations. Manifestly it has been impossible to collect the matured views of all those qualified by knowledge and experience to give worth-while information on this broad subject.

"The department will welcome criticisms and suggestions, and those received will have careful consideration when future editions of the book are undertaken."

Secretary Hoover's Introduction

Secretary Herbert Hoover, in a superscribed introduction, pays high tribute to the utility and possibilities of the legitimate trade association. He calls it an "important American business institution." "Very few of the trade associations, whose work is set forth in this volume, perform all the activities outlined," continues Secretary Hoover, "Some of them have made only a start while others have undertaken a large percentage of the work."

The practical and legitimate activities of a trade association have never been better summarized than they are in this later paragraph in the same introduction by Secretary Hoover:

The secretary says:

"Trade Association Activities

"Just as a business house or an individual meets its obligations and carries on its daily relations within the community, so the trade association has a real individuality in the business fabric. Its reputation—yes, its character—may be considered good, bad, or indifferent according to its day-by-day activities and long-run policies in relation to its members, its industrial or trade group, the Government, and the public. Of course, all trade association activities are not good, just as all individual habits are not good until so proved by their reactions on the individual and the community. Perhaps the best way to guide activities into the most constructive and profitable channels is thru thoro-going analysis and examination of those activities which seem on the surface to be constructive in their application and results.

That trade associations have not only a right but a duty to perform in the study of and watch upon all legislative developments affecting their particular industries is emphasized by Mr. Hoover: "Greater uniformity as to state laws affecting the public and industry and commerce may be brought about and the views of the trade as a whole can be properly laid before legislative bodies only thru association. The demand of legislatures for the views of the different trades upon all sorts of questions of public interest is incessant, and the open preparation and presentation of such matters is far more consonant with proper development of public life than the private lobbying of the few or powerful."

The vital need of improved and up-to-date cost accounting methods and the knowledge of fundamentals on this subject, is one that can most effectively be met by progressive association endeavor, in Secretary Hoover's opinion. Because of its very basis of organization, "the trade association becomes a trusted and reliable clearing-house for the industry's vital credit and collection information," continues Secretary Hoover.

The relation of the government to trade associations is thus expressed:

"Government Relations

"Whether the attitude of business be to 'keep Government out of business' or to the contrary, it nevertheless is true that the Government in its manifold activities directly impinges upon commerce and industry at many points. The control of public utilities, the restraint-of-trade acts, the large volume of Government-expenditures, all materially affect business, not to mention the legislative problems thrust upon the Government as the result of the after-war reorganization. Official trade information, official industrial statistics, official standards, procedure, and practice are being sought by the trades, and the Government is constructively active in co-operation with business to develop these fundamental services."

The outstanding subjects discussed at length and with illuminating knowledge by those collaborating in the preparation of "Trade Association Activities" are as follows:

I. Statistics
II. Legal Aspects of Statistics
III. Legislative Activities
VI. Simplification and Standardization (a very complete size-up of the important angles of this whole subject, which bids fair to revolutionize industry.)
V. Cost Accounting
VI. Credit and Collection Activities
VII. Trade Disputes and Ethics
VIII. Employe Relations
IX. Insurance
X. Public Relations
XI. Traffic and Transportation
XII. Commercial Research
XIII. Industrial Research
XIV. The Government
XV. Department of Commerce
XVI. Organization and Administration (this chapter gives a wonderfully complete outline and discussion of membership problems, organization structure, duties and responsibilities of officers, proper divisions of work, co-operation with other associations, financing methods, channels for distributing information, and includes a complete text of practical constitution and by-law provisions that may be adapted to any organization whatever.

Business Briefs and Trend

PRICE INDICES SHOW DROP

According to figures issued July 18 by the Bureau of Labor the retail food price index increased one per cent. from May to June, altho the general level of wholesale prices decreased nearly two per cent. in the same period.

Between May 15 and June 15 the retail prices of 13 articles of food increased, 15 others dropped and 15 remained unchanged. In the wholesale list, which included 404 commodities, a four per cent. decrease in building materials was the largest decline. Increases were registered in 53 commodities, decreases in 190, and no changes in 161.

From June 15, 1922, to June 15, 1923, retail food prices increased three per cent. and general wholesale markets decreased two per cent.

* * *

RAILROADS HANDLED RECORD FREIGHT

Despite the fact that car loadings are highest in the history of the railroads, carriers are having no difficulty handling all shipments. The table here shown gives the immense volume of tonnage being handled. For the week ending June 30, freight loadings totalled 1,021,770, the largest number for any one week in the railroad's history. During the same week there was a surplus of 63,636 freight cars in good repair available for carrying purposes. Such a thing as car shortage is, therefore, not likely.

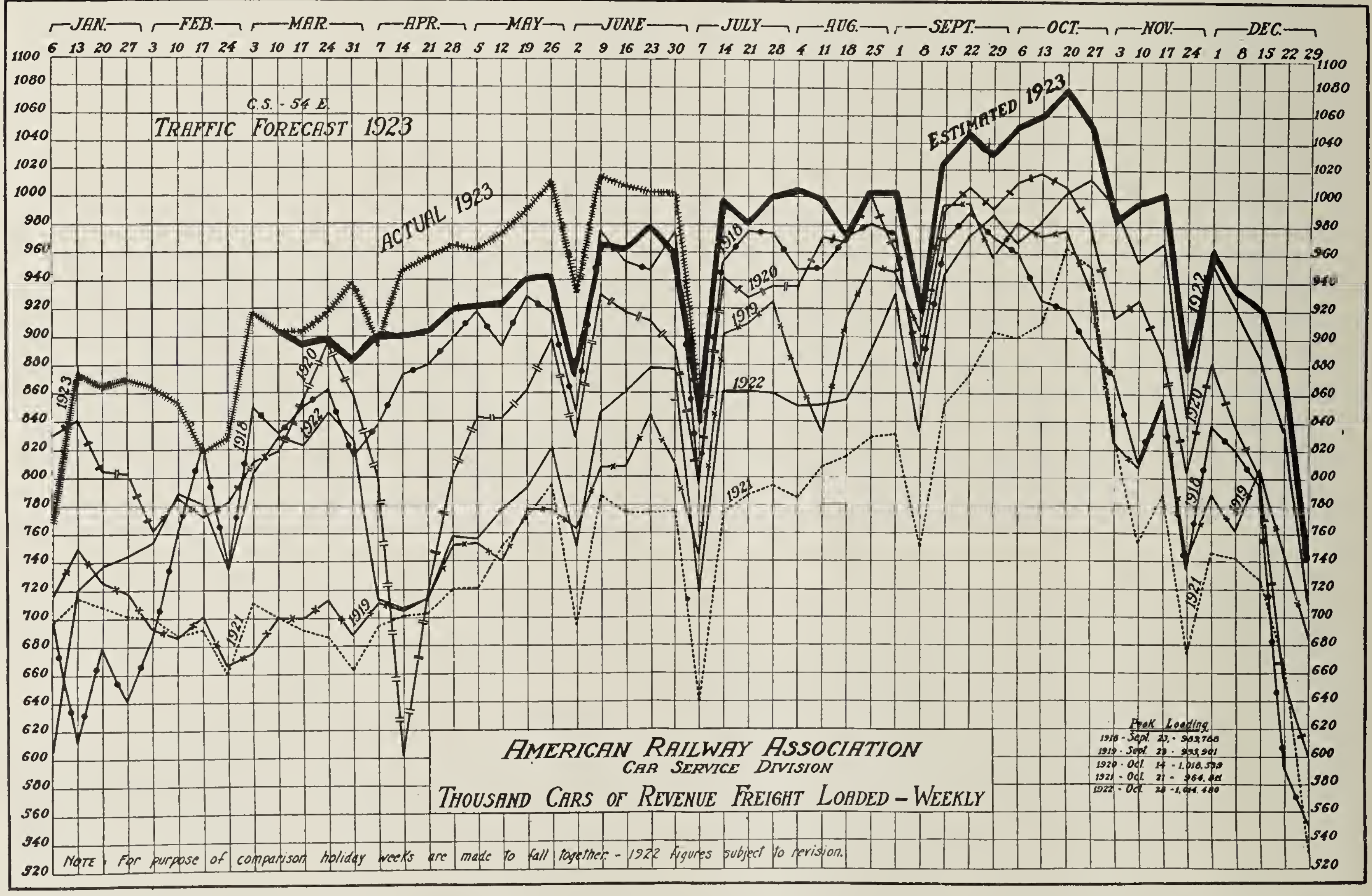
Loadings of Freight Cars in Last Three Years

	1923	1922	1921
January	3,380,296	2,785,119	2,823,759
February	3,366,965	3,027,886	2,739,234
March	4,583,162	4,088,132	3,452,941
April	3,763,963	2,863,416	2,822,713
May	4,873,427	3,841,683	3,733,137
June	4,045,012	3,414,031	3,114,137
Total for year to date	24,012,825	20,020,267	18,685,921

* * *

PEAK PASSED—BUILDING ON DECLINE

June construction volume was 14 per cent. under May, according to F. W. Dodge Corporation. The decline was general except in portions of the Central West. Total contracts awarded during June in the 36 Eastern States (including about seven-eighths of the total volume of the country)



In the Above Chart Two Curves Especially Deserve Close Attention. They Are the Lines Representing the Actual and Estimated Car Loadings for 1923. It Will Be Noticed That the Heavy Black Line Showing Estimated Loadings Is in Most Cases Considerably Above the Highest Figures of Any Other Year Including 1922, During the Fall of Which the Clay Industry Suffered Under a Very Severe Car Shortage. Large as This Estimate for 1923 Is, the Curve for the Actual Loadings Exceeds These Estimated Figures by Remarkably Large Totals, as Shown by the Cross Ruled Line in the Chart. There Is no Sign That Business Is Slowing Up Appreciably and It Is, Therefore, Logical to Suppose That the Actual Loadings for the Balance of the Year Will Exceed the Estimated Totals in the Same Degree as They Have for the First Part of the Year. If This Does Happen, Manufacturers Should Be Prepared for a Car Shortage When the Peak Loadings Occur in Fall Since It Is Doubtful Whether the Railroads Will Be Able to Handle Adequately Such Tremendously Increased Traffic.

REVENUE FREIGHT LOADED — WEEK ENDED SATURDAY, JUNE 30, 1923.*

DISTRICTS	Year	Grain and Grain Products	Live Stock	Coal	Coke	Forest Products	Ore	Mdse. L. C. L.	Miscellaneous	Total Revenue Freight Loaded		
										This Year 1923	Corresponding Year 1922	Corresponding Year 1921
EASTERN	1923	6575	2740	53994	3911	7251	9250	67391	98747	249859		
	1922	9966	2794	7859	2084	5389	7125	70195	91388		196800	188398
ALLEGHENY	1923	1957	2344	58381	7474	3806	15958	49513	86352	225785		
	1922	2277	2648	18629	4752	3157	11213	51666	75541		169883	155659
POCAHONTAS	1923	208	123	26210	449	2059	198	6367	4935	40549		
	1922	169	145	31331	254	1489	29	6465	4111		43993	35294
SOUTHERN	1923	3510	2098	21187	1248	23045	1562	38819	40564	132033		
	1922	3452	2108	22641	1276	19058	1264	37055	37633		124487	112152
NORTHWESTERN	1923	9962	9694	8400	1073	21906	50310	32701	37490	171536		
	1922	10285	8231	5563	1578	17684	42702	31420	34090		151553	114935
CENTRAL WESTERN	1923	10308	10980	13467	452	13290	3025	35634	55517	142673		
	1922	10727	10282	5304	270	7593	2312	35434	49872		121794	112886
SOUTHWESTERN	1923	4607	2700	4118	138	7892	488	14496	24896	59335		
	1922	4685	2124	2942	151	7348	410	14390	22285		54335	56755
TOTAL WEST DISTRICTS	1923	24877	23374	25985	1663	43088	53823	82831	117903	373544		
	1922	25697	20637	13809	1999	32625	45424	81244	106247		327682	284576
TOTAL ALL ROADS	1923	37127	30679	185757	14745	79249	80791	244921	348501	1021770		
	1922	41561	28332	94269	10365	61718	65055	246625	314920		862845	
	1921	40694	24524	157113	4391	47565	30766	216519	254507			776079
WEEK ENDED												
June 30	1923	37127	30679	185757	14745	79249	80791	244921	348501	1021770	862845	776079
June 23	1923	33958	29251	183350	14828	78068	82041	240403	340841	1002740	866321	775447
June 16	1923	33903	28461	187009	15167	78058	79298	241947	343410	1007253	848657	775328
June 9	1923	34390	32723	190149	14804	76380	76092	242766	345945	1013249	836208	787283
June 2	1923	32340	29399	171248	14389	73637	73390	216386	321252	932041	739559	693903

*Figures obtained from American Railway Association, Car Service Division, Washington, D. C.

amounted to $371,034,000. In spite of the decline, this figure indicates a large volume of work started. Any month that shows more than $350,000,000 for these 36 states is a heavy month. The decline from June, 1922, was six per cent.

Last month's total included: $136,313,000 or 37 per cent. for residential buildings; $75,596,000, or 20 per cent., for public works and utilities; $55,866,000, or 15 per cent., for industrial buildings; $44,727,000, or 12 per cent., for business buildings, and $26,410,000, or seven per cent., for educational buildings.

It seems probable that the peak of this year's construction volume was passed in May. Altho the second half of the year is not likely to have quite so large a construction volume as the first half, activity seems likely to keep on at a very considerable rate.

Contemplated new work reported in June amounted to $569,008,000, a decrease of 11 per cent. from the amount reported in May.

* * *

BUILDING 36 PER CENT. AHEAD OF 1922

Building permits issued thruout the United States during the first half of 1923 were 36.5 per cent. ahead of the same period in 1922. Permits issued in June this year, however, were only 2.3 per cent. ahead of the volume issued in June, 1922, and were 10 per cent. less than in May of this year.

These figures, which indicate a slowing up of building activities as compared with the unprecedented developments of the earlier months of the year, are based on official returns made to S. W. Straus & Co. from 225 principal cities and towns.

* * *

STRUCTURAL STEEL SALES DECLINE

The Department of Commerce announces June sales of fabricated structural steel, based on figures received by the Bureau of the Census in cooperation with the Structural Steel Society. Total sales of 112,735 tons were reported for June by firms, with a capacity of 223,595 tons per month.

Tonnage booked each month by 175 identical firms, with a capacity of 229,575 tons per month, is shown below, together with the per cent. of shop capacity represented by these bookings. For comparative purposes, the figures are also prorated to obtain an estimated total for the United States on a capacity of 250,000 tons per month:

1923	Actual Tonnage Booked	Per Ct. of Capacity	Estimated Total Bookings
January	172,415	75	187,500
February	183,938	80	200,000
March	218,997	95	237,500
April	*185,335	81	202,500
May	†130,828	57	142,500
June	‡112,785	51	127,500

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*Reported by 173 firms with a capacity of 229,225 tons.
†Reported by 169 firms with a capacity of 228,850 tons.
‡Reported by 152 firms with a capacity of 223,595 tons.

* * *

LUMBER OUTPUT EXCEEDS SALES FOR 5 YEARS

Cumulative production, shipment and order figures of seven associations reporting weekly to the National Lumber Manufacturers' Association for the past 4½ years show that from January 1, 1919, thru the middle of June, 1923, production exceeded shipments for the entire period by 1,762,676,462 feet, or by four per cent.; that production exceeded orders by 1,271,486,142 feet, or 2.8 per cent., and orders exceeded shipments by 491,190,320 feet, or 1.1 per cent.

* * *

NO CAR SHORTAGE DANGER IN SOUTH

Of considerable interest to the brick manufacturing industries thruout the Southeast was the meeting held in mid July at Chattanooga, Tenn., by the car service division of the Southeastern regional advisory board of the American Railway Association, at which time there was a considerable discussion of a possible car shortage in the district, and other transportation problems of importance to the brick industry. While there has been some promise of a car shortage developing brick manufacturers in the Southeast do not believe there will be such a shortage, or at least present indications do not make it appear that there will be.

Vitrified Pipe in Plumbing Systems

The Prize Winning Essay on the Above Subject in a Nation-Wide Contest—Subject Unusually Well Treated

William E. Morgan

Editor's Note.—This article won first prize in a nation-wide essay contest on "The Use of Vitrified Clay Pipe in Plumbing Systems," conducted by the Carnegie Institute of Technology at Pittsburgh. The contest was highly successful and all papers submitted were of unusually good quality. Wm. E. Morgan, winner of the first prize, is a student at Carnegie Tech. and the winner of the second prize, Thomas F. Moffett, Saranac Lake, New York, is a master plumber. The prizes, which were $100 for first prize and $50 for second prize, were donated by the Eastern Clay Products Co.

A MANUFACTURED ARTICLE that will attract the public's attention to any great extent must be cheap and at the same time be a quality article. Vitrified clay pipe stands the test for both of these requirements, first, being cheaper than any other pipe used in the plumbing trade, and second, being the only sewer pipe which will withstand the ravages of time and corrosion. A third reason for the use of vitrified clay pipe is the ease with which it can be handled in comparison with other pipes.

Building Septic Tanks

Septic Tanks.—Vitrified clay pipe can be used in the construction of a small one house cesspool or septic tank made of 36 inch clay pipe. Two tanks are built up of four lengths each, using 36 inch pipe. Two lengths of 36 inch pipe, one length being a 36x4 inch cross. The workings of this septic tank will be made clearer by referring to drawing No. 1, which shows the water entering into one of the large tanks, being vented just previous to entering, and being equalized by a connecting pipe in one of the lower lengths by a four inch connecting line. This allows the solid matter to settle to the bottom, which has been cemented solid. Thus any surplus water will pass into the smaller tank, first being vented, and from this place, the water will syphon out when it has reached a previously determined height. This water, which will ordinarily be in small amounts, can be distributed over a small area of ground by a system which will be explained in the next paragraph. Each of these tanks have removable tops in order that they can be cleaned out if necessary.

How Sewage Is Distributed

Distributing System.—In distributing the excess water from a large cesspool or septic tank the water is generally taken out of the large tank with a six inch pipe from two

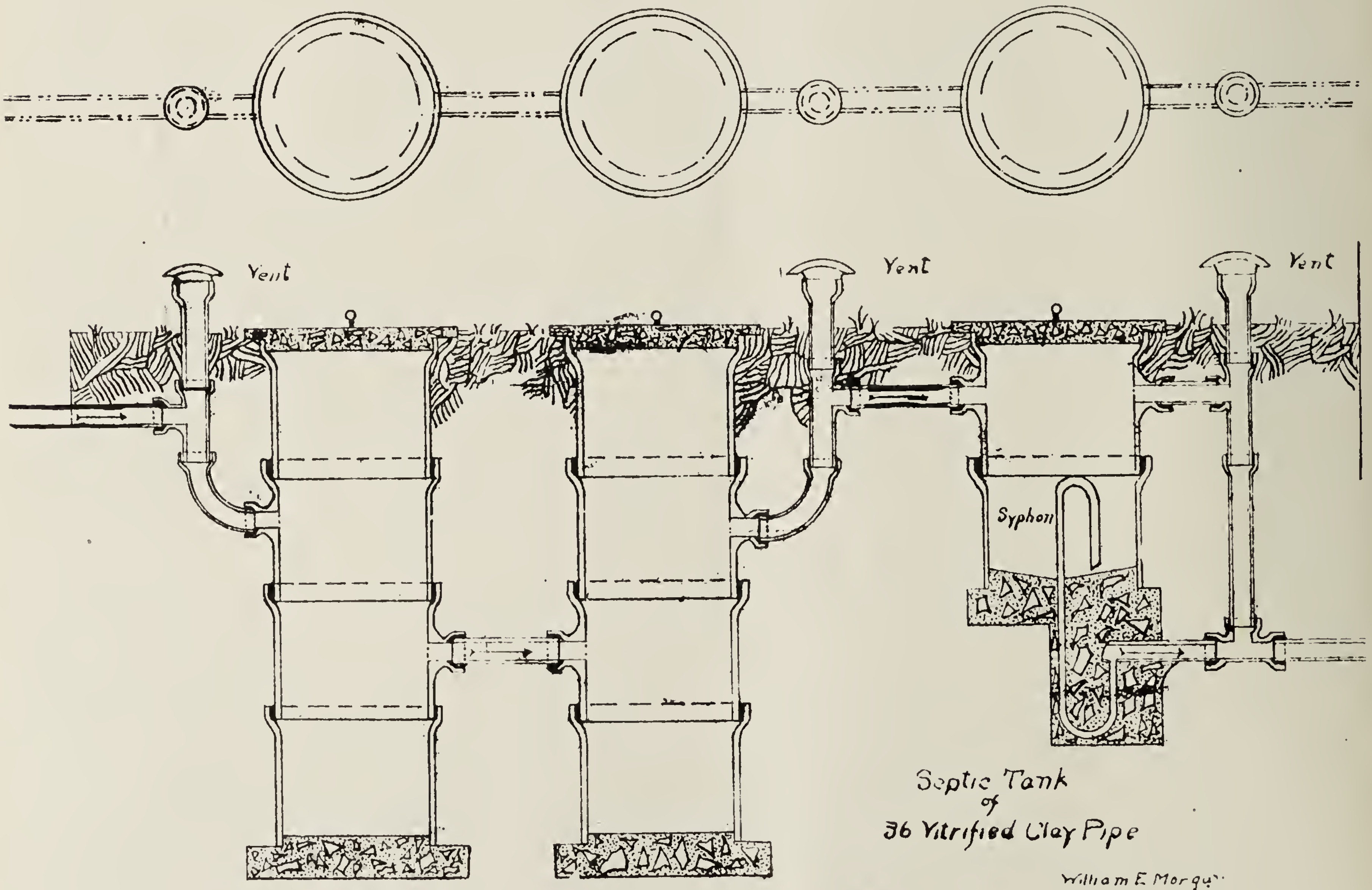


Figure 1. Plan and Cross Section of a Vitrified Pipe Septic Tank Installation Which Is Very Well Adapted for Use in the Country and on the Farm.

separate openings in the tank and is run in opposite directions. At certain intervals varying from 6 to 20 feet according to the nature of the soil, four inch Y branches are placed in the main six inch pipe and from these Y branch lines of four inch pipe are carried out to any distance desired. In laying this pipe, no joint material is used in order that the water may gradually run thru the cracks into the soil. In order to prevent the soil from getting into the pipe, pebbles or stones are put under the joints and a piece of tar paper is placed over the top. This method of getting rid of the sewer water is generally used unless a river or some natural drain is close at hand in which case the water may be piped, with joints sealed, to the desired location.

Pipe Often Falsely Maligned

Street Sewers.—The main street sewers are generally laid under the supervision of the town or city surveyor and this fact helps to insure the correct laying of the pipes. These pipes are distributed thruout the city getting gradually larger as they reach their destination with a man-hole at every important connection, for the purpose of cleaning out the sewer if necessary. The water is either run into a natural drain, as a river, or into a specially built sewage disposal plant from which place it is disposed of by several different methods. A great deal of unjust blame has been placed on vitrified clay pipe sewers because of frequent stoppage when in reality the town has perhaps doubled the number of taps which the pipe should have or else has connected the street sewers into it allowing leaves, mud, and dirt to pass into it, stopping it up.

Drains Under the Basement

French Drains.—French or sub-soil drains are laid under the basement floor or around the bottom of the footings of the outside foundation walls for the purpose of carrying off water accumulating from rain and other causes. The pipe used for this work does not generally have hubs and if hub pipe is used the hubs should not be cemented. This pipe is laid similar to the pipe used for the carrying off of septic tank water, having some stones under each joint and a piece of tar paper over each joint to keep out the sand. Around and above this pipe broken stone is placed to allow the water to reach the pipe, after which a layer of straw and then earth is placed on top. A clearer idea of this may be gotten by referring to drawing No. 2. This water being lower than the regular sewer cannot empty into it directly and must be either carried to a lower point and discharged or else carried to a specially built cement pit constructed for this purpose. The water may be pumped from this pit into the main sewer by means of a cellar drainer.

Carrying Away Roof Water

Rain Water.—In carrying away the water from the roof the water is generally conveyed from the roof by means of metal leaders which empty into vitrified clay pipe and is carried, either by a separate storm sewer or with the house sewer, into the main street sewer. At the bottom of each leader there should be placed a trap in as near a horizontal position as possible in order that the seal will not be broken. The size of this pipe should be estimated from the square feet of roof surface and the annual rain fall in order that the pipe will at all times carry the water away.

How House Sewers Are Built

House Sewers.—The chief use of vitrified clay pipe is the transferring of the waste water from the house to the main sewer. The trench is first dug, and the methods used vary according to the nature of the ground but the trench should always be as straight as possible in order that the water will have a free passageway. When the ground is sandy and the sides will have to be braced with boards on both sides to prevent caving and where the ditch is to be very deep a second row of boards may have to be used. These boards should be kept well down at the bottom in order that the sand will not run in. When gravel ground is found very often the sides will not need any bracing at all but if necessary a framework of boards may be used. Rocky soil will usually have to be plastered and will not bother the plumber as he does not very often do this work.

Laying the Pipe

The ditch should first be dug to within a few inches of the desired depth and then it can be leveled with the desired fall as the pipe are being laid and this will give the pipe a firm foundation which is essential in the laying of any type of pipe. These pipe should have a fall of at least one-quarter of an inch to the foot, and anything less than this is not considered sufficient to carry off the solid waste matter from the house. These pipe are easily cut by placing the pipe with the hub down and filling with gravel to the cutting point, then by going around the pipe a few times with a hammer and chisel the pipe will break off at the desired place.

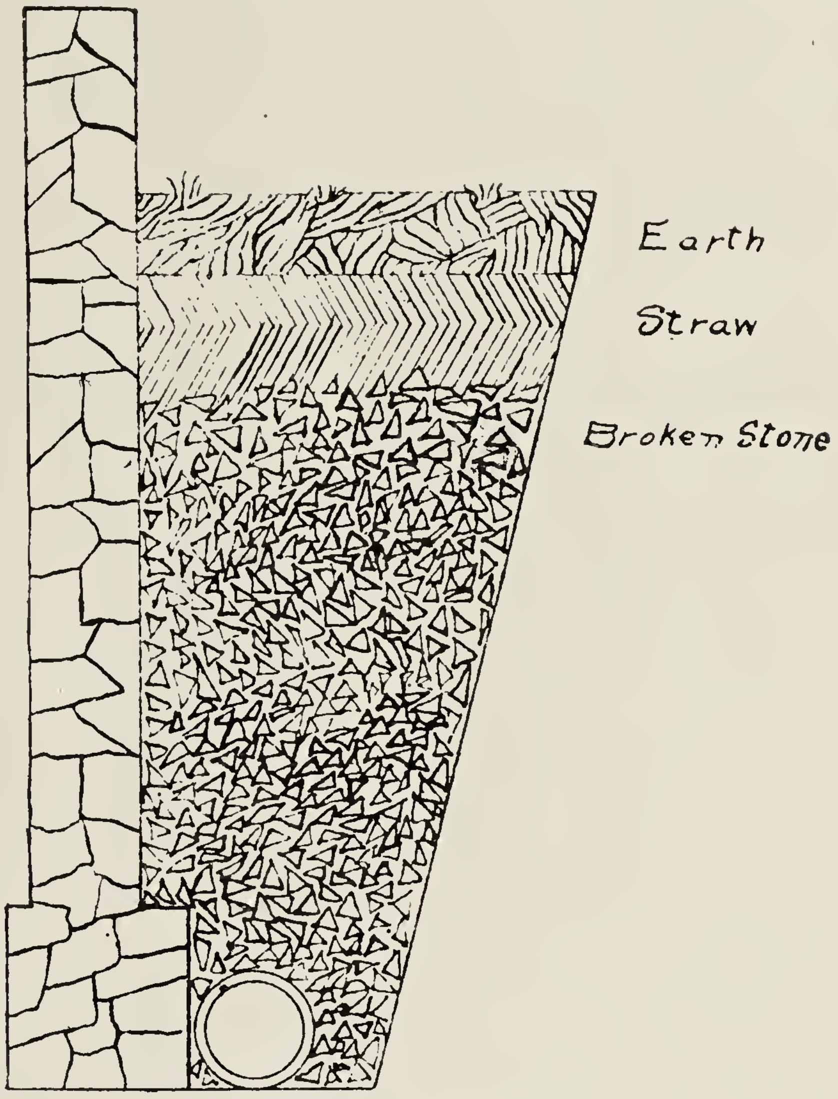


Figure 2. French Drain to Carry Off Water Accumulating Near the Foundations of a House.

Making Good Joints

In making the joints for these pipe several different methods are used, three of which I will explain.

1. Cement made of one-half pure cement and one-half good sand is used, being mixed to a pasty form which will not run. Some of this is placed at the bottom of the hub and the end of the other length is inserted in this hub and cement is forced in place with a trowel or with the hands. Then a swab is run into the pipe to remove any cement which might have been forced inside of the pipe.

2. Oakum mixed with cement is first caulked in the joint and then the remainder of the joint is filled with cement.

3. Oakum is first caulked into the joint and an asphalt or bituminous compound which has been melted so that it will run freely, is then poured into the joint and allowed to harden. A test can then be made on this joint which will satisfy

any requirements made by the health boards. The pipe may be placed in a horizontal position or may be placed in an upright position; in the case of its being placed in a horizontal position, a joint runner, first dipped into mud to prevent sticking, is used.

Inserting a Tee

If it is necessary to insert a tee or put in a new length of pipe the following method is used:

First break out the length to be replaced and cut the top of the hub from the next piece; then cut one-half of the hub from the piece to be inserted and it is ready to be put into place. By this means cement can be put inside of the hubs of the bottom part of the pipe which will allow a solid connection where the water will flow while the top of the hubs can easily be cemented as they are in a position where they can be reached. See drawing No. 3. In refilling the ditch great care should be taken in throwing the dirt into the ditch so that the pipe will not be thrown out of alignment and the dirt should be carefully tamped at the bottom to prevent disturbing the line of pipe. If water is used to pack the dirt it should not be put in until the ditch has been filled to the depth of one foot and in any case it should not be flooded into the trench.

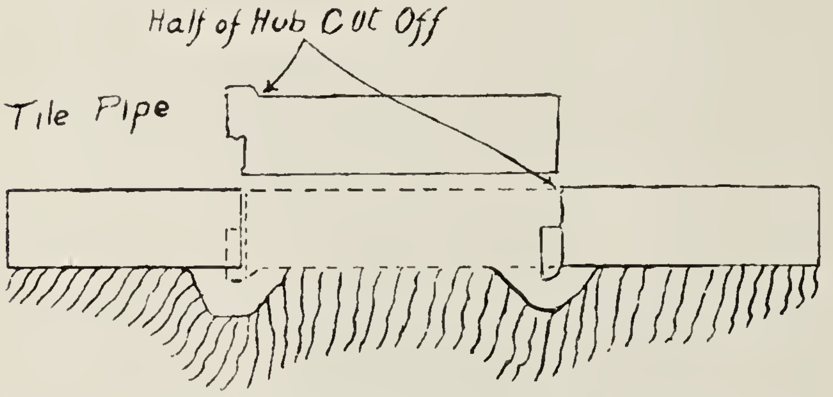


Figure 3. Good Method to Employ When Inserting a Tee or a New Length of Pipe After Line Has Been Laid.

In schools and laboratories where chemicals are used the installation of vitrified clay pipe is absolutely necessary because of the acids and alkalies and chemical activity on any metal conductors. These chemicals do not affect the glazed pipe at all and it is therefore the natural material to be used.

House Drains.—A good plan for the using of vitrified clay pipe for the house drains is that by extending the footing of the foundation for a few inches, vitrified clay pipe could be run on this which would give it a very firm foundation by not allowing it to sink at any point. The stacks could be fastened securely to the wall and allowed to enter the pipe at the bottom. A little thought on this matter would show that by this method a cheaper installation of plumbing would be brought about where cast iron pipe is necessary to any great extent because a small ditch would have to be dug in the middle of the floor for the cast iron pipe and this would offset any extra cost for the few inches of footing added for the vitrified clay pipe and besides the dirt foundation is never very solid while the footing would give a very firm base and if the building settled at all it would take the pipe on the footing with it.

In summarizing the previous writing, I find that I have mentioned three good points in favor of vitrified clay pipe:

1. Low cost.

.2 Will meet any test requirements with bituminous compound joints.

3. Is durable and will last indefinitely. The uses of vitrified clay pipe are many and varied:

1. Septic tanks.
2. Distributing pipes.
3. Main sewers.
4. Sub-soil drains.
5. Storm drains.
6. House sewers.
7. House drains.

35 FACE BRICK MEN MEET

About 35 members of the Red, Gray and Buff groups of the American Face Brick Association held a meeting in Columbus, July 11, at the Athletic Club, for the purpose of discussing conditions in these groups. Attorney Childs of the American Face Brick Association was the principal speaker on "business ethics." Reports showed that most of the plants are busy and that shipments are going along fairly well. The big feature of the meeting was the following day when the brick men to the number of 28 visited and inspected the plants of the Claycraft Brick Co., and the Ironclay Brick Co., both at Shawnee and the Straitsville Impervious Brick Co., at New Straitsville. Dinner was served at the latter place. The party was under the charge of Paul Hodges, general manager of the Claycraft Brick Co.

* * *

SUPERINTENDENTS MEET AT GALESBURG

The Superintendents' Club recently organized by superintendents connected with plants that are members of the National Paving Brick Manufacturers' Association, held its second meeting at Galesburg, Ill., July 7. The meeting was very interesting, especially the visits to plants of the Purington Paving Brick Co., which are large and modern establishments. After the plant visits those present gathered at the Galesburg Club for a discussion on plant problems. The subject of burning and cooling occupied most of the time used for discussion. Altho the number of members is not yet as large as it should be or will be, the Galesburg meeting was nevertheless well attended. It was decided to hold the next gathering at Independence, Kans., on October 13, 1923.

Following is a list of those present: Harry Brown and O. Brin, Buffalo (Kans.) Brick Co.; Chester Francis, Coffeyville (Kans.) Brick & Tile Co.; H. H. Jenkins, Western Shale Products Co., Ft. Scott, Kans.; J. W. Watson, Thurber (Tex.) Brick Co.; Hugo Babtist, Springfield (Ill.) Paving Brick Co.; Otto Spring, Paul Handke, and Everett Swett, Purington Paving Brick Co., Galesburg, Ill.; S. W. Gibson, Independence (Kans.) Paving Brick Co.; Jack Drueke, Murphysboro (Ill.) Paving Brick Co.

* * *

U. OF M. HIGHWAY FELLOWSHIPS

Two of the following Fellowships will be awarded not later than September 10 and two not later than November 1, 1923, by the Board of Regents of the University of Michigan.

The Roy D. Chapin Fellowship in Highway Engineering, which is offered to provide for the investigation of an approved subject relative to Highway Transport.

The Roy D. Chapin Fellowship in Highway Engineering, which is offered to provide for the investigation of an approved subject relative to hard surfaced roads and pavements.

Two Detroit Edison Fellowships in Highway Engineering, which are offered to provide for the investigation of approved subjects relative to moderate cost country roads.

* * *

KENTUCKY PRODUCING LESS BRICK

47 establishments in the state of Kentucky during the year 1919 turned out brick and tile, terra-cotta and fire-clay products valued at $5,686,000, reports the Kentucky Manufacturers' Association. The average number of wage earners engaged was 2,349, and the State ranked ninth among those listing such industries.

The makers of common brick in Kentucky that year produced 53,215,000 brick, as compared with 90,000,000 when a similar census was taken five years earlier. Their combined output was valued at $698,114, or more than $100,000 over the total value of the greatly increased output of 1914.

Five pottery establishments in Kentucky employed 105 wage earners and produced $208,000 worth of goods.

What Does a Brick Cost?

Here Is an Extremely Interesting Article Written by a Brick Man to His Fellow Manufacturers in Language They Can Understand

J. A. Pugh

Treasurer, Nansemond Brick Corp., Norfolk, Va.

WHAT DOES A BRICK COST? This is a burning question—but not altogether a question of burning. There are other things to be considered.

Do we get enough money for common brick, considering capital invested, ability of management, time required to process a brick, heavy expense of maintenance and repairs, heavy depreciation incident to handling heavy tonnage, expense of selling (including bad debts), and the losses due to breakage and spoiling in making, drying and burning?

It is a basic fact that in order to get at the expense of manufacturing we must use a proper divisor. If we turn out 100,000 brick on the machine and experience shows that we lose ten per cent. thru breakage and spoiling, we should deduct ten per cent. at the end of the month from the number of brick manufactured. If we made brick every day (which would mean 2,500,000 in a month), then after deducting ten per cent. the proper divisor would be 2,250,000 instead of 2,500,000.

Figure Net Output Carefully

All of us know to our sorrow that we brick manufacturers too often "count our chickens before they are hatched." Theoretically, if we set a kiln ten times, in one year, and put in 300,000 brick each time, we should get three million merchantable brick. But the quality of the fuel used, the state of the weather, the kind of attention given the kiln during the burning period, and the varying quality of the clay, all conspire to upset our schedules. Sometimes a kiln turns out 50 per cent. salmon, sometimes 90 per cent. hard. Sometimes arches stick or fall in. Some first class brick manufacturers say that losses due to breakage causes alone would average 10 per cent. Therefore it is a reasonable precaution to add 10 per cent to our expense to take care of these losses. Or in estimating output we should deduct 10 per cent from the number of brick set in order to get a proper divisor.

This is not an ordinary article on the subject of cost accounting. Rather it is a very clear and logical presentation of facts which show beyond a doubt the tremendous importance of knowing costs and figuring them on the correct basis. The author is a brick man himself and talks in a language which all brick men can understand. It will be worth your while to read this article whether or not you now have a cost system. If you do not have a cost system, this article may convince you that it is not a deeply involved and complicated task to know what a brick costs.

First let us mention what we may call direct expense—by which we mean those expenses which we do have when the plant is operating, and which we do not have when we are not manufacturing. These may be summed up under the headings of Labor, Maintenance and Repairs, Supplies and Fuel.

It is generally agreed that on these items there is no great difference between the costs at a small plant and the costs at a large plant. There is, of course, some difference, but not sufficient to account for the wide variations in selling prices.

We come now to indirect expenses or overhead expenses—by which we mean those expenses which have to be paid as long as we are in business, whether we are running at 100 per cent. or 50 per cent. of capacity.

These may be summed up in a general way under the following headings:

Interest on Investment,
Insurance,
Taxes,
Rents (if any),
Royalties (if any),
Depletion (decrease in value of land thru taking out the clay),
Depreciation (decrease in value of machinery, buildings, plant, and equipment, due to the fact that, in spite of maintenance and repairs, machinery, and so forth, does finally wear out),
Salaries of Superintendent and Foremen,
Salaries of Managing Officers or of Owners,
Office Expense (advertising, selling, cash discounts on sales, and so forth),
Traveling Expense,
Reserve for Bad Debts,
Deductions from Sales (rebates and allowances, commissions to agents, trade discounts).

A Fair Profit

If we could sell our plant and book accounts, we could invest the money in sound first mortgages on which we could realize certainly six per cent. Therefore the money in our business is worth six per cent, and we should figure this into our costs. As a matter of fact, we could invest our money at six per cent. without risk. But money invested in the brick business ought to realize better than six per cent. in view of the fact that we are bound to have bad years as well as good. Consequently, if we do not figure fifteen per cent. to twenty per cent. profit we are not likely to net even six per cent. on our invested capital.

The items of Insurance, Taxes, Rents, Royalties and Depletion are probably individually small. Some manufacturers figure on paying these out of profits. But these items are large in the aggregate and should be added to costs. We will then stand a better chance of making a profit.

No competent manufacturer fails to figure depreciation in his costs. But it is astonishing how many men figure depreciation only when they have a good year. It is ridiculous to say that plant and equipment wear out when we are *making* money and do not wear out when we are *losing* money.

There are various complicated ways of figuring this most important item, but it is generally agreed that, in the brick business, an allowance of ten per cent. per annum on the value of the plant and equipment is sufficiently accurate for all practical purposes. The fact that this is the normal depreciation allowed on income tax returns is good evidence that this is not an excessive rate.

The reasons for including Superintendence, Management, Office and Selling Expense, and so forth, in Indirect Expense (altho these items are paid every month) are perfectly sound.

Pay Yourselves a Salary

Some owners may be surprised at the suggestion that they pay themselves salaries. Many figure that anything they have left after paying expenses is their salary. This method indicates a hopeful disposition, but has ruined a great many manufacturers. A man who has the brains to run a brick business, and who is willing to work hard enough to make it a success, is certainly entitled to a salary allowance of at least $250 per month. Many managers are paid much more, and earn the salary. And if an owner's services would be worth that to others, they ought to be worth at least that to himself.

> **"Anyone can take an order, but it takes a good salesman to refuse one," says J. A. Pugh, Treasurer, Nansemond Brick Corporation, Norfolk, Va. He must consider the credit risk, the quality of his material, its real cost, and what is a fair price. And if he cannot close the sale at a fair price, he must have confidence in his ability to place his product elsewhere.**
>
> **"Reducing a selling price 50 cents or $1 per M., may seem a slight matter—but when you consider that this reduction comes out of the net profit, it may mean a positive loss instead of a possible profit.**

These expenses can be determined in advance with a fair degree of accuracy. Most of them are paid daily or monthly. By including them in overhead and figuring them in with the average cost per M. of overhead expense, it makes it much simpler to keep up with current costs.

Determining Overhead Cost

In order to arrive at the cost per M. of Overhead, many successful manufacturers argue that these indirect expense items should be estimated for a year in advance. Most of these expenses are known in advance and can be accurately figured. Some vary with the activity of the season, but can be estimated with fair accuracy. (And when you total these figures they may surprise you.)

How are we to arrive at the correct average per M. to cover these costs? If a plant has a capacity of 10,000,000 brick per year, and can put out 10,000,000 per year, the divisor is 10,000,000 brick. If a plant has a capacity of 15,000,000 brick per year, and indications are that not more than 7,500,000 can be sold, then 7,500,000 is the figure to use in arriving at overhead cost, and not 15,000,000. If prospects are for a dull season, it is unwise to figure on producing to capacity. Our brother manufacturers will not let us do it. They will also try to produce to capacity. But do what we may, a shortage of building operations will shut down plants and compel reduced output. It will be readily seen, therefore, that it is of the utmost importance to try to gage in advance what our yearly output will be.

How Overhead Varies

As an illustration we give below the theoretical expense of equipping and operating a plant with a maximum capacity of five million brick per year. We have figured that $30,000 has been invested in machinery, dryers, buildings, and so forth (all subject to depreciation), and $20,000 has gone into real estate and operating capital.

Interest on $50,000 at 6 per cent	$ 3,000.00
Insurance (liability, fire, and so forth)	500.00
Taxes	300.00
Rents	......
Royalties	......
Depletion	100.00
Depreciation (10 per cent. on $30,000)	3,000.00
Superintendent's salary, 12 mos. at $150	1,800.00
Salary of owner or of managing officer	3,000.00
Office expense, traveling, and so forth	1,000.00
Bad debts	500.00
Total	$13,200.00

If 5,000,000 brick is the maximum capacity of the plant you cannot expect to get, after deducting breakage, over 4,500,000.

Overhead expense $13,200 divided by 4,500,000 equals $2.93 per M.

Note below how this cost per M. increases if we do not attain capacity.

Overhead $13,200 divided by 4,000,000 = $3.30 per M.
Overhead $13,200 divided by 3,000,000 = $4.40 per M.
Overhead $13,200 divided by 2,500,000 = $5.28 per M.

Determine Overhead Expense Accurately

It is of the first importance that we determine in advance, as accurately as we can, what our overhead expense per M. will probably be. And in estimating this average it is of the utmost importance that we should figure how many brick we can probably sell after taking into consideration the state of general business, the probable activity of the season, and the competition to which we are exposed. If business conditions are poor, and the building season inactive, experience has shown that it is practically impossible to achieve capacity without reducing prices below cost. This may make selling a pleasure, but it makes the annual report very unpleasant to face.

Having arrived at what we feel is a safe allowance to make for overhead expense, the only additional costs to be considered are the Direct Costs, viz.:

Labor,
Maintenance and Repairs,
Supplies,
Fuel.

All of us are pretty well posted on what these daily costs are.

How the Cost Is Figured

Figuring costs now becomes rather simple. Let us assume the following costs:

Average cost of Daily Labor	$2.00 per M.
Average cost of Maintenance and Repairs	.75 per M.
Average cost of Supplies	.50 per M.
Average cost of Coal	3.50 per M.
Total Direct Expense	$6.75 per M.

ANNOUNCEMENT

The front cover of this issue mentions an unusual proposal. The Clay Service Corp., because of its supreme confidence in the ability of its equipment to save money on all clay products plants, has asked Brick and Clay Record to supervise a test on a kiln located on any clay plant chosen by Brick and Clay Record.

In accepting this proposal to conduct an official test of the Gates automatic stoker, Brick and Clay Record appreciates the confidence reposed in it and its unquestionable integrity. Moreover, we congratulate the Clay Service Corp. on its broad and daring stand to determine the merit of its product in this impartial manner.

Add to this the overhead expense of two, three, four or five dollars per M. and we have our cost f. o. b. plant.

As in all manufacturing businesses the overhead expense is of tremendous importance, especially in those seasonal lines of business where output is irregular.

Knowing the total amount of indirect expense or overhead, and knowing what output you have figured on, it is a very simple matter to increase or decrease the allowance for overhead as conditions change and you find that the output is more or less than the original schedule.

A Wrong Cost Method

Some manufacturers divide Total Costs to Date by Total Brick Made to Date. This is a wrong and deceptive method. Taking theoretical figures, let us assume that six million brick have been made up to June 30 at a cost of $72,000. Let us assume that in July there has been an advance in the price of coal and in the wage rate amounting to 50 cents per M. on one million brick made. Up to June 30 the cost is $12 per M. For the month of July the cost is $12.50 per M. The average cost to date, up to July 30 would be $12.07 per M. If the whole six million brick are on hand they are worth the cost of replacement, and the manufacturer would be justly entitled to the profit represented by increased costs. It is certain that should there be a drop in the prices of labor or of coal, he would have to sell on a declining market. If the six million brick have been sold as produced, then the million brick produced in July should be sold on a basis of a cost of $12.50 per M. Taking the other side, had there been a decline of $500 in the monthly cost, the million brick produced in July would have cost $11.50 per M., while the average price to July 30 would be $11.93 per M. In that case an active competitor would sell on the basis of his current cost, and $11.93 would be too high as a cost basis.

Why Some Manufacturers Lose Out

In conclusion, it is evident that a selling price based on production costs of two, three or four months past is apt to cause a manufacturer a loss of business in a period of declining costs, as he will be met by merchandise manufactured on a current lower basis; and in a period of rising costs, he will sell his production on too close a margin while his competitor is basing sales on current increased costs.

How to Reduce Overhead Costs

As in other manufacturing businesses producing staple merchandise in competition with manufacturers located in practically the same territory, the question of achieving plant capacity is of the highest importance. Margins of profit are low, and it is only by large production that costs can be reduced.

As is well known, selling at cost when there is not enough business to keep near-by competitors busy, reduces the selling price level, but does not reduce the cost, because competitors in the long run get the percentage of business to which they are entitled.

Variations in Selling Prices

From a study of statistics it is clear that one of the chief reasons for the great differences in selling prices is the fact that many manufacturers do not figure costs correctly. This results in injury to other manufacturers who are asking fair margins based on accurate costs, and in the long run spells failure for the manufacturer who sells too cheaply because he doesn't know his costs. In this connection we would recommend that you get a copy of the pamphlet "Fundamentals of a Cost System for Manufacturers," published by the Federal Trade Commission in July, 1916, and which is issued by the Government Printing Office.

As manufacturing capacity usually largely exceeds probable demands, we should all make a concerted effort to increase the demand for brick.

* * *

FORMULATE TERRA COTTA SPECIFICATIONS

The National Terra Cotta Society and the American Institute of Architects, working thru their respective committees on specifications and structural service for the past two years, have formulated a set of specifications for architectural terra cotta and its setting.

William H. Powell, as president of the National Terra Cotta Society, and Stephen F. Voorhees, as chairman of the Structural Service Committee of the American Institute of Architects, submitted the specifications to the American Engineering Standards Committee for development, and ultimately for approval as a national standard. The specifications already developed will form the basis of work of a representative sectional committee which will be organized specially for the purpose.

As a result of the consideration of the problem, the special committee unanimously recommended, at the meeting of the American Engineering Standards Committee on June 14, that the Bureau of Standards should act as sponsor for the work, assuming the responsibility for the organization of the sectional committee, which, as is the regular course under A. E. S. C. procedure, will include all interests concerned in the manufacture, use, and setting of architectural terra cotta. This recommendation was adopted by vote of the American Engineering Standards Committee, and the organization of the working committee and the development of the specifications will be promptly undertaken.

Lamination and Die Troubles

Interesting Problems Encountered by a Pacific Coast Plant and How the Troubles Were Overcome

James G. Adderson

Superintendent Renton Plant, Denny-Renton Clay & Coal Co., Seattle, Wash.

Editor's Note—The following remarks on die working and lamination by James G. Adderson, superintendent of the Renton plant, Denny-Renton Clay & Coal Co., Seattle, Wash., as well as the paragraph following Mr. Adderson's remarks are the result of a discussion held at a recent meeting of the Pacific Northwest Clay Workers Association.

WE USED TO THINK a number of years ago, that to turn out a good brick it was necessary to run the column of clay about as stiff as the auger machine would stand up under, but when I say good brick, it went for outward appearance only. This method of manufacture proved by the street wear and rattler tests, aided and assisted by engineers of the various cities with their complaints, that an excess of lamination was decidedly against paving brick as far as wearing qualities went. We first of all ran different tempers on our clay, watching the structure closely and discovered that the soft temper showed such a decided improvement that we adopted this method of manufacture, as one means to cure lamination. Then the point is this, to cut down lamination, keep the clay as soft as possible, but still of a consistency which will permit of well shaped ware. If you do this more than half of the battle is won. For your own personal observation, the next time the auger throws the drive belt, thru hard tempering, note the laminated appearance of the clay remaining in the die. This may seem a simple remedy, but it is a fact nevertheless.

Selecting Right Die Liner

The next thing that demanded our attention was dies, die fronts, lubrication augers and their bearing on troubles. These were grouped into two classes—die lamination and auger lamination, or differential flow of the column, the center moving faster than the outside. A number of different die liners were tested, among them the sheet steel, tool steel, and cast iron. After numerous tests, it was decided to adopt the cast iron liner die, equipped with white iron front or issue plates. The design was made both from a standpoint of economy and efficiency. This particular die had what we thought, two very good points to enable us to combat our trouble, namely, a broken surface where the clay touched only at intervals and a direct pressure of steam at right angles against the clay, thereby reducing die lamination to a large extent because of the friction of the clay passing thru the die. Different taper liners were tried ranging from 1, 1½, 2 and 2½ inches to the foot. Thus the mass is kept moving together as far as possible, but none showed any marked difference as far as lamination was concerned. We chose the 1½ inch taper, because of the fine column we were able to get.

Obviating Air Blisters

Then, after all, our two classes of lamination sifted down to one and the same thing, that is, by removing die friction, we reduced auger lamination. We still had one other, very serious trouble which I doubt if any of you gentlemen have encountered, and that was an air blister forming on the column after leaving the die, say a distance of two feet. Numerous die fronts of different depths were tried until we finally had our die as close to the auger as possible, but this only increased rather than decreased our trouble. With the die in this position we tried oil lubrication applied under pump pressure, also cold water, but we were getting nowhere. We finally found the whole fault lay with the auger, for this reason. The auger, especially while new and not worn to any extent, kept the barrel of the machine half empty where the mixing knives were located. This gave a chance for air pockets to enter with the clay taken up by the auger, coming out in the form of blisters or air pockets. The solution was easy. We cut down the efficiency of the auger to a certain degree, thereby keeping the barrel of the machine full of clay. This remedied all our trouble.

Problems Worked Out with Shale

The problems here recounted were all worked out with shale, while manufacturing paving brick, and while they may not fit in along other lines of manufacturing products, I have touched on merely a few high points in connection with the details of manufacture, and wide experience secured by us during the production of a large volume.

During the discussion which followed Mr. Adderson's remarks the following interesting points were brought out:

Soft Metal Better Than Hard

Brass dies have been found satisfactory in removing lamination troubles when iron and steel dies gave trouble. Brass dies were found necessary with sticky Canadian clays of the great plains region and the Mt. Vernon Brick & Tile Co. uses them.

The experience of most of those members who had tried the harder steels, such as chrome steel, for die lining was unfavorable because of sticking and retarded flow. It was suggested to ask the metallurgists of the Bureau and College of Mines for assistance in this problem. The Denny-Renton Clay & Coal Co. gets a two million run of paving block with chilled white iron front plates.

* * *

LEACH CLAY PRODUCTS DISSOLVED

With the recent announced purchase by the newly organized Northern Clay Products Co., at Manitowoc, Wis., of the holdings, plant and business of the Leach Clay Products Co., the stockholders of the latter concern have voted to dissolve the Leach corporation. Elbert C. Leach was president and Elmer Leach, secretary. The new Northern company has $60,000 capital stock and the men behind the organization include L. B. Lange, C. M. Kellerman and H. M. Sweet, the incorporators, and A. R. Trace, who is said to be head of the new company. The property acquired from the Leach interests was formerly the Manitowoc Clay Products Co. and is located up river from Manitowoc, comprising 72 acres of land and a brick manufacturing plant.

Use Machines Instead of Men

It Is the Only Solution to the Problem of Labor Shortage—the More You Are Dependent on Labor the More Difficult Is Your Problem of Making Money

WHAT HAS BEEN one of the outstanding cartoons of the year appeared recently in one of Chicago's daily newspapers. Divided into two parts, the upper portion of this cartoon illustrated a manufacturer standing in the doorway of his factory, his arms out-stretched, beseeching the government to abolish the immigration quota law and to provide him with more labor. The second part of the cartoon showed a vast army of unemployed men (the result of unrestricted immigration) over which walked a red propagandist sowing the seeds of discontent and revolution.

Labor Shortage Here to Stay

And so it is. But while there are admittedly two sides to the question there is all the evidence in the world that the existing labor shortage will continue for some time—if not actually grow. Growth is certainly assured if there is to be a new and destructive crop of strikes. (And every indication points to an anthracite strike September 1.) However, that same labor shortage may be a blessing in disguise by way of acting as a stem to the flood of communistic propaganda that is growing in intensity day by day thruout the country. An army of unemployed men can do more damage in one week, politically, socially and materially, than an acute labor shortage will in an entire year. And if you doubt that statement (your doubt being born perhaps thru your own experience with the lack of common labor) just look to our Mother Nation—England—where there are a million and a half men without even the prospect of gainful employment—where Labor forms a real political party (as powerful in England as the Democratic party is in the United States) and where that labor element holds a recognized and important place in Parliament. Nor is the red complexion altogether lacking in the English Labor party.

Machines Instead of Men

But all of this is beside the point. The real problem is: how can we overcome our labor shortage without letting down the bars to undesirable aliens and unassimilable foreigners who come to our shores with one of only two ideas—either that of fattening their pockets or agitating the cause of the bolsheviki. And there is a way to accomplish this, and as is the case with many of the most perplexing problems, that way is surprisingly simple. It is merely, machines instead of men.

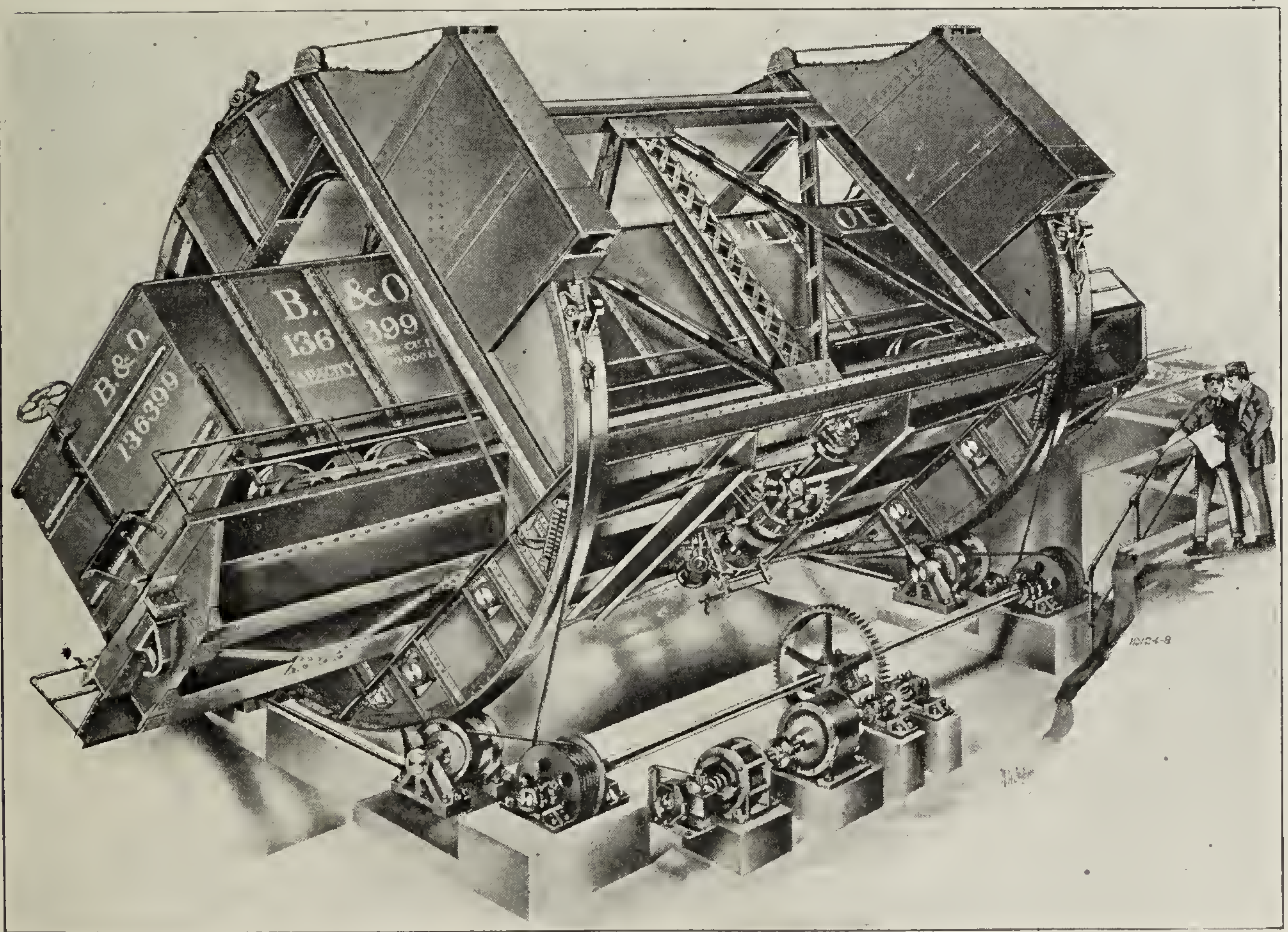
The Trend of the Times

Brick and Clay Record
Gentlemen:

We are still emptying our kilns of face brick, tile and blocks with wheelbarrows, and anyone who has had experience with this method knows what grief and expense there is connected with this method of handling brick. We understand that some plants use labor saving devices such as gravity conveyors, gasoline tractors with trailers to great advantage and with economy.

We would be very pleased to get in contact with parties who are using improved methods to empty kilns and place the contents in cars or storage sheds.

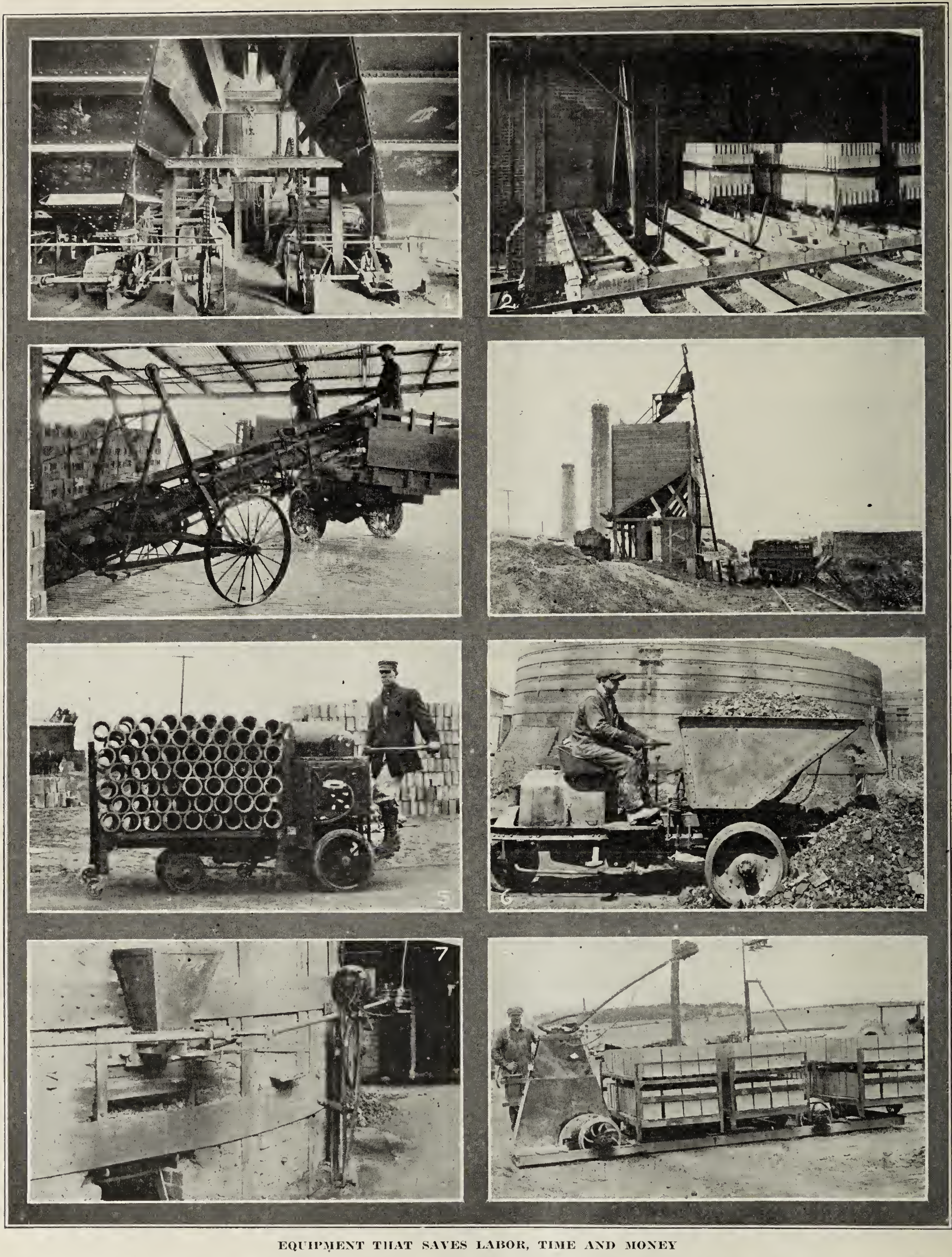
Very truly yours,



□ □ □

Altho There Is Probably Little Use for Equipment of This Nature in the Clay Industry, Yet It Is Shown Here Because It Symbolizes the Spirit of Automatization. This Car Unloader, Manufactured by the Link-Belt Co., Will Take Gondola Cars of Any Size and Shape and Dump Them at the Rate of 40 Per Minute. Think How Many Men Are Released for Other Duties by This Machine.

□ □ □



EQUIPMENT THAT SAVES LABOR, TIME AND MONEY

Figure 1 Shows Two Large Steel Clay Hoppers. Apron Feeders Take the Clay from the Bins and Feed It to Dry Pans Automatically. Fig. 2. Dryer Car Puller Located Beneath the Tracks. It Is a Motor Driven Shaft on Which Are Located 12 Winding Drums and 12 Jaw Clutches. By Means of a System of Cable Arrangements, Using the Drums and Clutches One Man Can Open and Close Dryer Doors and Pull 15,000 Brick in About 15 Minutes. Figure 3 Shows a Loading Conveyor Taking Brick from Stock Pile into Motor Truck. With the Coal Unloader (Figure 4) Demurrage Charges Are Unknown. Figure 5 Illustrates the Storage Battery Truck Which Speeds Up Operations and Saves the Labor of Many Men. The Little Gasoline Tructractor in Figure 6 Hauls Coal for All Kilns, Removes Ashes, Broken Ware, and so Forth, and Has Time to Do Odd Jobs. Figure 7 Shows Kiln Stoker Which Will Burn Off a Kiln Better and with Less Men Than a More Experienced Fireman. The Equipment Shown in Figure 8 Moves Loaded Dryer Cars to Kilns with a Minimum of Men and Little Breakage.

Nor is there, because of governmental and labor union policies, any other way whereby this desired end may be attained. The automatization of industry, or the improvement on such automatization as has already been made, is the one solution. Returning to a prosperous period always necessitates an increase in our productive capacity and the expansion of our distributing systems. If men are not to be had the only way this can be accomplished is thru the introduction of more and more machines.

Machines Only Solution

Economists agitating a "perfection" of our monetary system; theoretical "salvation" in the form of new laws or burning the midnight oil in a vain endeavor to improve industrial relations seldom if ever even assists in the solving of this problem. There lies before American industry but one way as the solution for high wages, reduced hours and efficiency, increased production and labor shortage and that solution is—**machines.**

The O'Gara Coal Co. Saved the Labor of 50 Men Every Day Thru the Use of This Crawler Crane.

It is an American characteristic to boast of our super-ingenuity. Much was said of what that element—what our ability—was going to do for us and the world in general, during the days of 1917. Yet the fact remains that industry has hardly begun complete industrial adaptation or application of labor saving or labor aiding machines and devices. It is no exaggeration to say that 80 per cent. of all manufactories could save the labor of from one to one hundred men thru the proper application and installation of better designed and more efficient machinery and equipment. And while such machinery effects a downward trend in prices (or an upward curve in profits) it does not decrease wages.

More Contented Workmen

And rarely does automatization fail to effect some economies and reduce some costs. Evidence of this is on every hand, for altho the country's mills and factories have not installed one-tenth the necessary mechanical substitutes, there are few that have not had some experience with bettered mechanical methods.

Occasionally the installation of more efficient mechanical means effects not only a financial saving but creates a favorable impression among the workers—which is also expressive of greater profits.

Such an instance as this occurred in one of the brick and tile plants in Ohio. The former power transmission was a rope drive, and aside from breaking every now and again, causing a great deal of trouble, delay and expense, it occupied considerable space. A change was made. The rope drive was discarded and a Link-Belt silent chain drive installed in its stead. Not only has there been a very decided financial saving thru the transition but the space thus released has made possible a wash room for the men—a much appreciated feature.

One Machine Saves 50 Men's Labor

But perhaps one of the greatest economies effected by a single piece of equipment of a type with which the clay industry is familiar was that of a gasoline crawler-type crane installed at the O'Gara Coal Co. in Harrisburg, Ill. Used for mine-fill work around the mine this crane saved the labor of 50 men a day for a period of over three months. At the rate of $6 a day, this economy soon mounted to proportions of astonishing size. Indeed, the crane, it is said, more than paid for itself during the course of the first few months.

Such illustrations can be had by the bushel, each of them adding weight to the advisability of installing more efficient machinery. Down in East St. Louis there is a plant (not clay) that is installing a new gondola car dumper which will save the labor of scores of men. It seems that this new car unloader will accept any gondola of standard design, regardless of its height, weight, capacity, length—that the most unskilled labor can act as operator—that a 35 horse power motor is all that is required for its operation and that it will unload such gondola cars of coal or like material at the rate of **40 an hour!** Shades of needless perspiration! Well does the writer remember, as a boy, the hot summer days he put in shoveling coal from a gondola at the rate of 15 cents a ton, and by dint of much hard work and back ache, doing about one car a day!

80% Behind Ability to Use Machines

But such a recital as this could be continued indefinitely. Everyone knows the value of labor saving machinery and devices. We know that when the wheelbarrow supplanted the load on men's backs, humanity was benefited immeasurably. And we know that with the electric trucks and tractors that are now replacing the wheelbarrows, still greater benefit will be accrued. We know that should we wipe from the face of the earth all of the material handling equipment now in use that we would cease to exist. We could not crowd on to this globe enough men, to produce by bare hands, even the prime essentials. But—as said before, we have hardly begun the application of machinery to industry. We are at least 80 per. cent. behind our own ability. Let us make use of the machines and devices at hand. Automatization will alleviate if not nearly overcome the existing labor shortage. It will tend to level wages, increase production, better our products, and reduce prices. In the words of K. L. Condit, in a recent issue of the American Machinist, here is the situation: "The industries of the United States are certain to be faced with a serious shortage in the supply of common labor. It is obvious that if this country is to continue to expand industrially, means must be found for doing with machinery the work that has formerly been done by hand labor. The men to operate the machines are at hand; the money with which to purchase and install them will be found when needed. It remains for the manufacturer to install that machinery to do the work of industry. A great duty and a great opportunity lies before them."

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THREE COMPANIES JOIN R. M. A.

At the meeting of the Refractories Manufacturers Association which was held at French Lick, Ind., on June 14 and 15, the application for membership filed by the Utah Fire Clay Co. of Salt Lake City was favorably acted upon. Similar action was taken with reference to membership applications filed by the Alabama Clay Products Co., of Birmingham, Ala., and the Camden (N. J.) Fire Brick Co.

MINTER KILNS Give Large

Graphs clearly show relative number of Periodic and Minter System Kilns for an equal capacity.

Kilns cost money and kilns that you don't have to build *Save You Money*.

Other things being equal you would not ignore the saving in first cost, Would You?

But "Other Things" are not equal. Because:

Periodic Kilns require an average of 1,250 lbs. of coal per 1,000 brick. Minter System Kilns use less than half as much for both drying and burning.

For an annual capacity of 15 Million Brick.

Coal at $4.00 per Ton. Your Saving $15,000 per year.
Coal at $6.00 per Ton. Your Saving $22,500 per year.
Coal at $8.00 per Ton. Your Saving $30,000 per year.

10 year period.	Coal at $4.00	$150,000
10 year period.	Coal at $6.00	$225,000
10 year period.	Coal at $8.00	$300,000

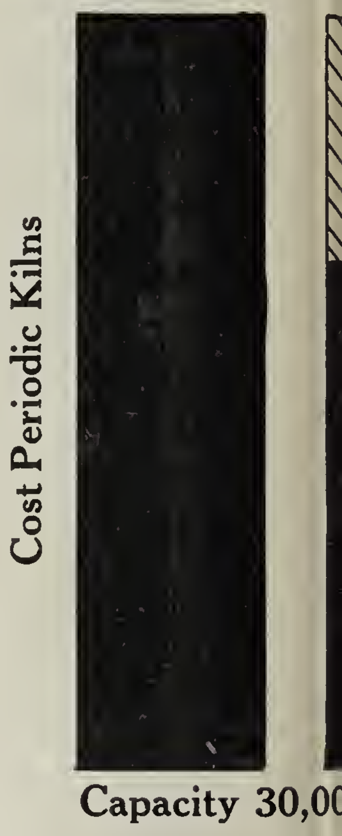
After 10 years your kilns will still be good enough to repeat the performance.

It costs very little to investigate.

Will you give us an opportunity to *show you?*

An old exper
visited us very rece
for five days he mad

"I built six kilns last year
ity. If I had come here f
built more kilns. I hav
enough but I did not belie
am sorry I did not decide
Your claims are absolutely



Capacity 30,00

Let Us Show You
Witho

MINTER

215 Doctors Bldg., Columbus, Ga.

acity With Low First Cost

brick manufacturer
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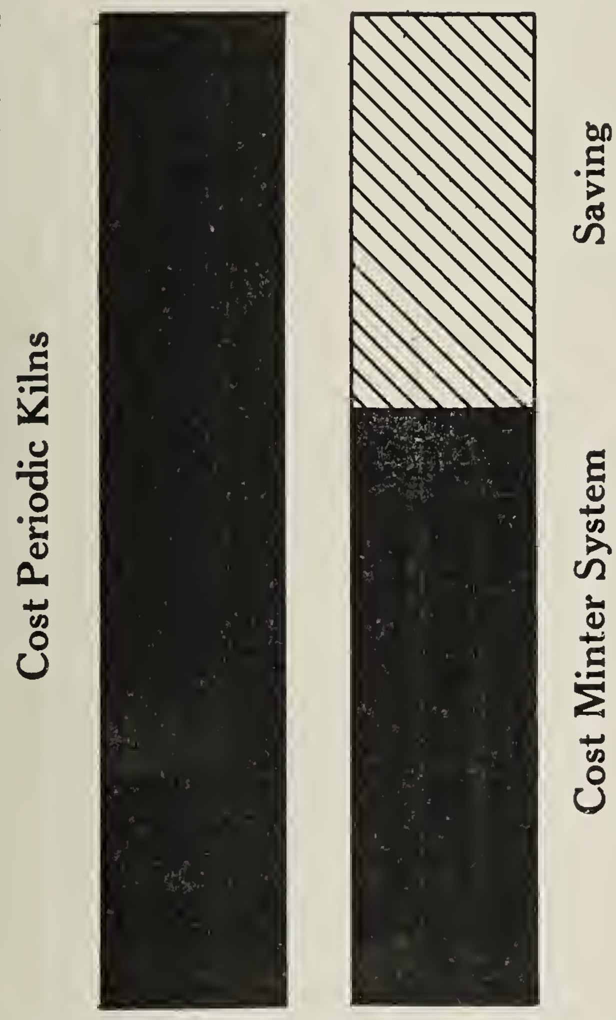
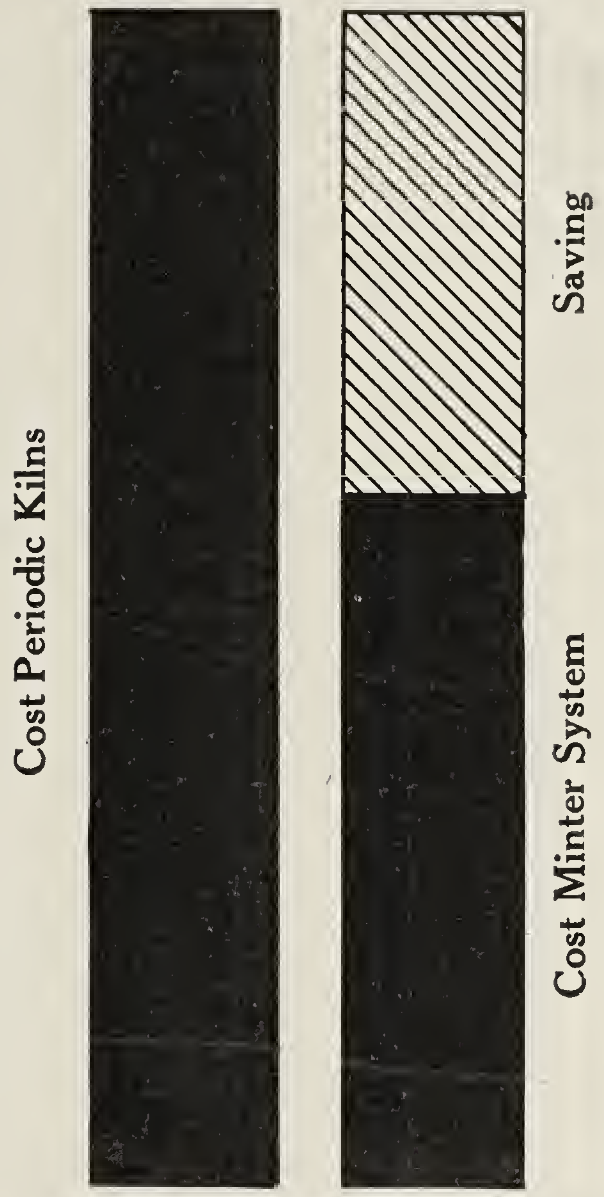


Capacity 40,000 Daily



Capacity 50,000 Daily

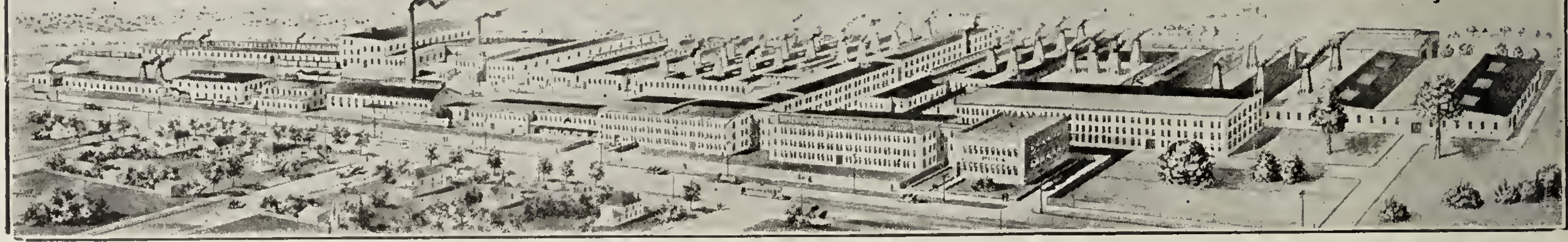
at Has Doubled in Capacity
a Single Kiln

IT PAYS THE USERS
"FIRST and LASTS"

SYSTEM

Home Office, Albany, Ga.

FINE CERAMIC MANUFACTURE



A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

EUROPE'S POTTERY INDUSTRY IN 1922

BETTER OVERSEAS DEMAND coupled with some recent improvement in the domestic market enabled the pottery industry in the United Kingdom to operate during 1922 on a scale which compared favorably with that of the preceding 12 months. The mainstay of the industry in 1922, however, was the export business, and it is estimated that practically two-thirds of the total output went to overseas customers. The general slackness in domestic buying experienced during the greater part of the preceding year continued thru more than half of 1922, but a perceptible quickening in this field was noted during the last three months.

While on the whole all branches of the industry were fairly active during 1922, producers of utility earthenware and high-grade chinaware were more constantly employed than were others. After the final installment of the 20 per cent. reduction in wages agreed to in 1921 was brought into force in February, wages continued at the then existing level. With few exceptions the number of workpeople unemployed was relatively constant, standing at around 13 per cent. of the total. The industry passed the year successfully from a financial point of view, failures being limited to a few small and comparatively unknown firms.

Prices continued all during 1922 at the lower scale put into effect at the end of 1921. An exception of importance to this was provided in the case of earthenware export prices, which were further reduced during October by about ten per cent. in anticipation of a rise in the American import tariff. In December announcement was made that additional price reductions ranging from 7½ to 15 per cent. would become operative in the various branches of the industry commencing with the year.

The total volume of pottery goods exported during 1922 was considerably greater than that of the 12 months preceding. Since, as stated, prices were at a reduced level, values were consequently lower. On a value basis the United States again was the best customer for British goods; Canada, Australia, India, and Argentina ranking next in order. The table below shows by chief countries of destination total exports made during the years 1921 and 1922:

British Exports of China and Earthenware, by countries, 1921.and 1922.

	Hundred Weight	Value	Hundred Weight	Value
Germany	511	£1,638	3,247	£2,611
France	119,786	149,089	180,090	153,616
United States	223,346	1,016,090	309,340	965,584
Brazil	84,446	281,721	89,385	276,918
Argentina	227,003	474,757	269,221	405,102
British South Africa..	114,764	375,355	104,347	285,662
British East Indies....	333,568	588,010	389,746	523,878
Australia	161,135	691,024	177,594	750,854
New Zealand	75,899	365,796	83,648	382,525
Canada	361,115	944,625	373,612	766,238
Other	1,063,867	1,500,479	1,275,307	1,291,757
Total	2,765,440	6,388,584	3,255,537	5,804,745

STRIKE COSTS WORKERS $300,000

At the annual meeting of the National Brotherhood of Operative Potters held in Atlantic City, N. J., July 7, 8, and 9, it was brought out that the recent strike in the pottery industry, which started November 1, 1922, has cost the pottery union in the neighborhood of $300,000. This figure could not be verified but leaked out from an unknown source. Altho the pottery workers were very secretive regarding the happenings at the convention, it has been rumored that the strike in the sanitaryware industry is considered as lost by the union and that overtures in some form or other will be made to the manufacturers to get back in their good graces. This also could not be verified.

Altho elections were bitterly contested, all old officers were again returned to office. They are: John T. Wood, East Liverpool, president; first vice-president, George H. Cartlidge, Trenton; second vice-president, George Chadwick, East Liverpool; third vice-president, Louis Driber, Trenton; fourth vice-president, S. M. Moore, Trenton; fifth vice-president, T. B. Dennis, Trenton; sixth vice-president, Thomas Woods, Sebring; seventh vice-president, Frank Hall, East Liverpool; secretary and treasurer, John McGillivray, East Liverpool.

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TILE COMPANY EXPANDING

Extension work has been started at the Friderichsen Floor & Wall Tile Manufacturing Co. in Independence, Mo., that will add 10,000 square feet of floor space and will increase the capacity of the plant 75 per cent. When the improvement is completed a new kiln will occupy the space now used for the finishing department. This and the packing department will be moved into the new addition. At present three kilns are in operation and only floor tile is made at the factory. The new kiln will be of different construction than the kilns now in operation, and will have six chambers. The company announces that this is only a beginning of what is contemplated for the future and it expects to duplicate the present plant on the ground south of the present factory so that wall tile can be manufactured.

A unique system on this plant is the method of heating the operating buildings in winter by a system of pipes thru which the waste heat from the kilns is conducted. This idea was developed by Christian Friderichsen.

⁂

STANDARD INCREASES CAPITAL

Papers have been filed with the secretary of state increasing the authorized capital of the Standard Tile Co., of Zanesville, Ohio, from $225,000 to $300,000 to provide for extensions and betterments to the plant at that place.

⁂

DISCOVERS NEW POTTERY DESIGNS

A new discovery of pottery designs has recently been made by Dr. Walter J. Fewkes, of the bureau of ethnology, of the Smithonian Institute, Washington, D. C. These are unique and unusual designs and beautiful reproductions of animal figures placed upon pottery by Mimbre Valley Indians reported to have been worked out long before the discovery of America. Since the equipment used to aid in the secrecy of this art is unknown, it is said Dr. Fewkes reports that the figures placed on the pottery are nothing short of marvelous. Dr. Fewkes has engaged in the study of Mimbre pottery since 1914.

* * *

WANT POTTERY AT BATH, ME.

A movement is under foot at Bath, Me., for the establishment of a pottery in that city. The idea is being advanced by Geo. B. Wetherbee, superintendent and mechanical engineer of the Bath Iron Works. Mr. Wetherbee points to the supply of raw material such as, feldspar, which is close at hand, as being a good reason for establishing a plant at Bath.

* * *

KAOLITE MAY BUILD NEW PLANT

A large tract of land in Round Bottom near Moundsville, W. Va., has been purchased by the Kaolite Manufacturing Co., it is reported. The company will probably build a plant for the manufacture of fire brick and refractories. The consideration is said to have been $100,000.

* * *

MOSAIC TILE COMPANY FORMED

A new company known as the Tile & Mosaic Co. of Springfield, Ill., has filed articles of incorporation with the state with a capital stock of $15,000. The concern will manufacture tile and mosaic sundries. The incorporators named are: A. Edward Aberman, Benjamin E. Cohen and Sophie Rosenzweig.

* * *

PITTSBURGH EXHIBIT JANUARY 7-28

January 7 to 28, 1924, have been set as the time for the annual pottery and glass exhibit held under the auspices of the Associated Glass and Pottery Manufacturers. This is always one of the big events of the year in the pottery industry and draws hundreds of buyers to Pittsburgh, Pa. The 1924 display will be the 44th annual one.

* * *

CHINA COMPANY FORMED IN W. VA.

The Monongahela China & Mfg. Co., Mannington, W. Va., has been formed under state laws with a capital of $200,000, to operate a local pottery for the manufacture of general ware. Arrangements will be perfected at an early date. The new company is headed by F. W. Vance, William F. Staggers and F. H. Huey, all of Mannington.

* * *

NORTH EAST OPENS PLANT

The North East (Md.) Porcelain Co., is advancing production at its local plant, which is a former pottery, taken over and opened in May. Large orders, it is stated, have been received, assuring continuous operation for at least six months to come. A large number of women and girls has been added to the working force in recent weeks, and practically all of this kind of help that applies is being employed.

* * *

LEASES CLAY LANDS IN ARKANSAS

A clay products company located at Poplar Bluff, Mo., has secured a lease on lands five miles southwest of Imboden, Ark., for the purpose of mining large deposits of china clay, it is said. The clay will be shipped to the company's plant at Poplar Bluff.

FORM SANI-TILE CO., MILWAUKEE

The Sani-Tile Co., Milwaukee, Wis., has filed articles of incorporation with $100,000 capital stock. The incorporators are Edward A. Lueck, of the Builders Supply Co.; E. E. Pruhn and George Herff. The concern will engage in manufacturing.

* * *

STABLES GUTTED BY FIRE

Fire on June 30 practically destroyed the interior of the two story brick stable of the Equitable Pottery, Trenton, N. J. Good work of the fire department confined the conflagration to just one building.

* * *

TO ESTABLISH POTTERY AT VANCOUVER

C. E. Jocellyn of Seattle, Wash., manufacturer of pottery, is negotiating for the establishment of a plant at Vancouver, B. C., for the manufacture of flower pots and earthenware pottery. The clay will be obtained at Port Haney.

* * *

PRIZE HOME USES TILE WALLS AND FLOORS

The prize house being built in Indianapolis, Ind., by the Indianapolis News is being constructed with tile partition walls and tile floors in the kitchen and bath rooms. Much favorable comment from architects and others who have inspected the home have been made on the tile features of this house.

* * *

BYBEE SOON READY TO START

Operations have begun at the plant of the Bybee Pottery Co. of Lexington, Ky., a new concern. Bybee pottery has been manufactured by one family in Madison County, Ky., for more than a century.

* * *

LIMOGES BUILDING NEW OFFICE

The Limoges Pottery Co., of Sebring, Ohio, is preparing plans for the construction of a new office building to replace the one recently destroyed by fire. The structure will be 60 by 90 feet and two stories high. Private offices will be constructed for each of the company executives.

* * *

FLOATS $2,000,000 BOND ISSUE

Pacific Sanitary Manufacturing Co. of San Bernardino, Cal., has filed a trust deed of $2,000,000 to secure an authorized issue in first mortgage gold bonds. It has been rumored that this money will be used to develop the company's clay deposits in the northern part of San Bernardino County.

* * *

NEW PROCESS OF COAL DISTILLATION

"Low temperature distillation of coal on a commercially profitable basis, sought by chemists for many years, has been discovered," says a recent issue of Christian Science Monitor. "This announcement is made without qualification by the inventors of the new process and with this information comes another bit of data, which will appeal to the popular imagination—Henry Ford is the pioneer in this new industry, which opens vast fields and holds astounding economic possibilities."

If the claims of the inventors prove to be correct this new idea will be of the greatest significance to industry. A greater amount of by-products will be recovered from the coal, among which will be 10 gallons of gasoline from every ton of coal. Its greatest benefit, however, would be the greatly reduced cost of generating electric power which this new invention would make possible.

Management and Superintendence

EXTRA PUG-MILL INCREASES CAPACITY

Very often, just a simple change involving very little outlay for additional equipment, and only a little time and labor, will effect a remarkable saving in time of doing a certain operation, amount of labor required, power or equipment necessary, or it might even increase the production. This was proven conclusively by a superintendent on an eastern plant making a change and at a time when business was brisk, too.

Formerly, the machine room of this plant was equipped with two hollow ware machines, and the total production was 3,300 tons of tile per month. The machine room was changed by taking the pug-mill of one of the machines and using it for a primary pug-mill for the other machine. Only one auger machine is now in operation, the other being set aside.

From the primary pug-mill the clay is conveyed to another pug-mill located directly over the auger machine. The auger machine was speeded up considerably. It now runs 32 r.p.m. despite the fact that the upper limit for this machine was claimed to be only 29. The extra pug-mill is not essential to the successful manufacture of hollow ware, but by giving a better mixture it enables faster operation and hence greater production.

The result of this rearrangement was a machine room of greater efficiency. An increase in production from 3,300 to 4,300 tons per month was effected with no increase in the total number of men used and with a minimum expenditure of money.

* * *

EQUIPMENT DOES WORK OF SIX MEN

Perhaps not every plant is arranged so that an industrial storage battery truck is adaptable. But there are undoubtedly a great many whose plant condition would permit the use of such equipment with a saving similar to that experienced by a company in the East. The superintendent of this plant estimates that the use of an industrial storage battery truck operated by one man enables the company to accomplish work that would otherwise require six men.

An Elwell-Parker industrial truck handles 500 brick on this plant as rapidly as a man handles 50 on a wheelbarrow. The brick in a kiln are loaded onto lift platforms, and these carried by truck to the storage shed or cars. Six men and the truck unload 30,000 fire brick in a total of 15 man hours, or about 2½ hours per man. An average time for this same amount of work in unloading a kiln of fire brick is about 42 hours, or seven hours per man when six men are used.

Moreover, the truck at one of the company's plants, according to the superintendent, during the process of unloading has spare time available for use in pushing and placing dryer cars, and for distributing and disposing of coal and ashes.

The system employed for handling coal and ashes with the storage battery truck is of particular interest because of the novel methods involved. A special type of Atlas dump body, such as is illustrated in the accompanying photograph, has been found very useful. The body rests on four legs and is constructed so that the platform of the truck can run underneath the dump body and raise it so that the legs will be cleared from the ground. The truck then places the body wherever desirable. Both coal and ashes are handled in this manner, and the saving is considerably over any other scheme yet devised.

* * *

HAS AUTOMATIC RECORDING SCALE

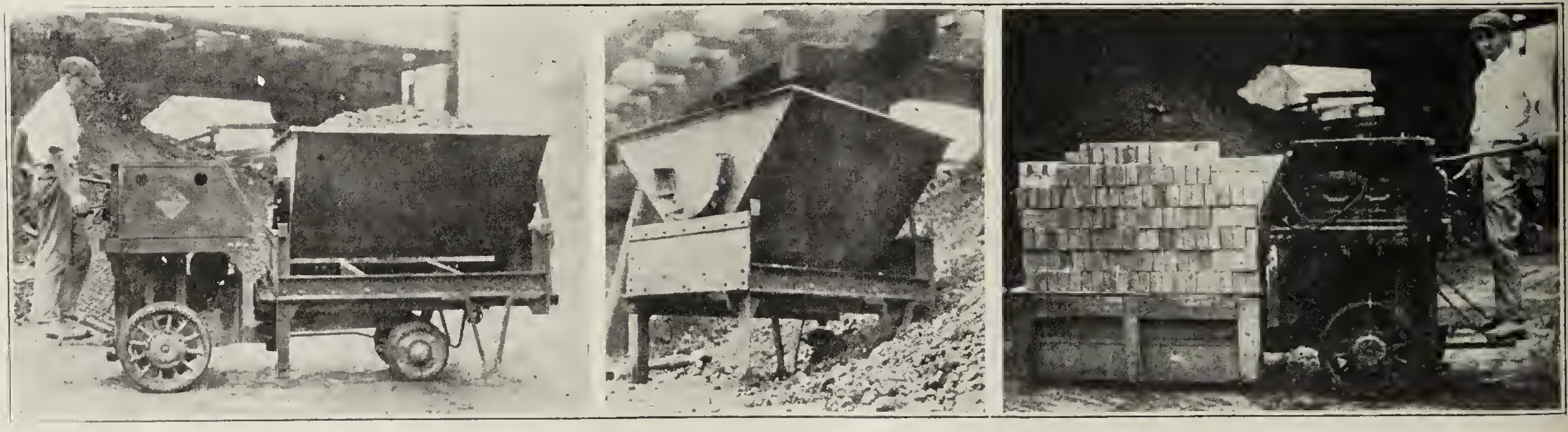
A unique and interesting installation at the plant of the Eureka Fire Brick Works, Mt. Braddock, Pa., is worthy of mention. This is a set of recording scales built by the Howe Scale Co., equipped with a Streeter Ammet automatic recording device which accurately records the weight of cars of clay and coal as they are slowly rolled over the scale.

"This arrangement has worked very satisfactorily so far," says E. L. Messler of the company, "and we have every reason to believe it will continue to do so as similar scales have been in use for many years in coal plants. It is eminently satisfactory in avoiding disputes as to weights as neither miners or company touch the scales and they cannot be tampered with except by the expenditure of a lot of time and trouble as the automatic attachment is kept locked."

The company is also installing a Hummer screen for sizing ground clays and silica rock and an electric drive on one of the dry pans. Some time ago a fire clay conveyor and sacking device was completed. This equipment conveys the clay directly to the cars from the clay bins, a distance of 200 feet, sacks it in the car and loads it properly, requiring but two men.

The company handles coal economically by the use of tram cars, which deliver it directly to the kilns and boilers.

The production personnel of the company consists of: J. M. Dilworth, general superintendent; W. Millott, assistant superintendent; A. F. Hibner, plant superintendent; and Charles Fullem, mine superintendent.



This Electric Truck Has Been Found to Take the Place of Six Men. It is of Great Assistance in Unloading Kilns, Distributing Coal, Handling Ashes and Pushing Dryer Cars

The Ohio State Journal.
The State Journal Reaches the Paying Power
Weather
An interesting advertisement never lacks readers.
The Buying Power Looks to The State Journal
ONE HUNDRED AND TENTH YEAR. NO. 84.
COLUMBUS, OHIO, WEDNESDAY MORNING, MARCH 24, 1920.
PRICE TWO CENTS
WILSON LIFTS CONTROL OVER PRICE OF COAL
Advises Operators and Miners to Fix Up the Scale; Warns Against Profiteers
Dayton Girl Voted Prettiest at Miami
Wood Leads in South Dakota; Lowden Second
Touted As the New German Chancellor
RIOTING SURE IF RISING RENT IS NOT HALTED
—NEW YORKERS SAY
Renters in Gotham Carry Their Fight to Members of the Assembly
Suffrage Fails in Delaware, Is the Forecast
HARDING MUST FIGHT IN HAMILTON COUNTY
CITY ELECTION TOO HIGH
Democratic Leaders Have Coference With Governor
LOWDEN TO BE FIRST IN NOMINATING LISTS
Miners' Strike Seems Imminent
$1.25 An Hour
Williams Is Confirmed
HAIGH KILN
PLANT OF
THE SHALE BRICK COMPANY
COLUMBUS, OHIO
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BRICK IN HAIGH
REMOVING BURNED BRICK FROM HAIGH KILN

This Columbus (Ohio) Haigh Kiln at the plant of The Shale Brick Co., is burning Thirty Thousand Perfect Brick a day and is doing it with half the coal and half the labor of ordinary kilns. The new State Journal building was built of these brick.

Let us give you the name of the satisfied owner of a Haigh Kiln near you so that you may investigate the Haigh advantages. None are unsuccessful.

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Formerly The American Clay Machinery Co.

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Motor Drive

and we also build them for

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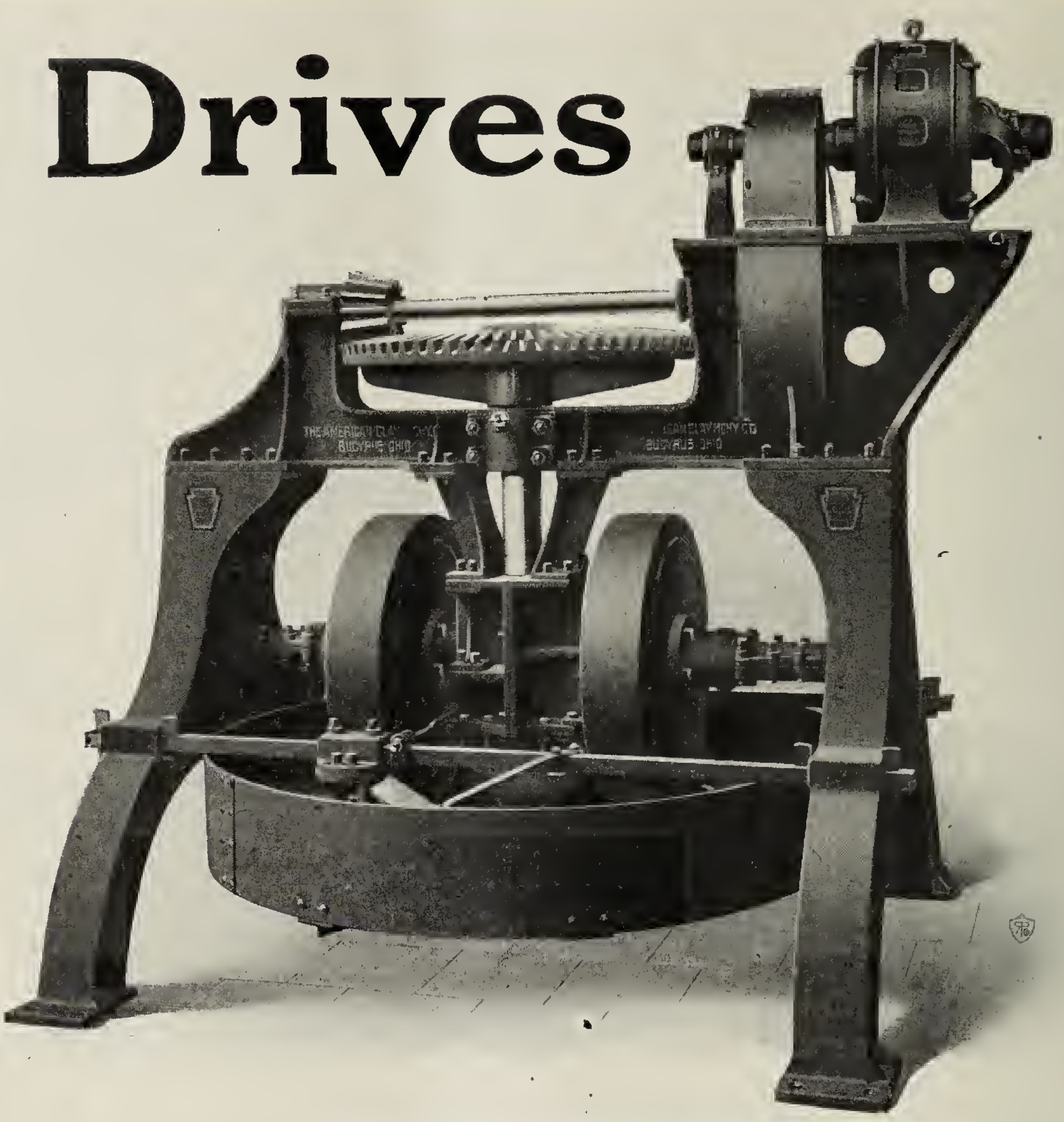
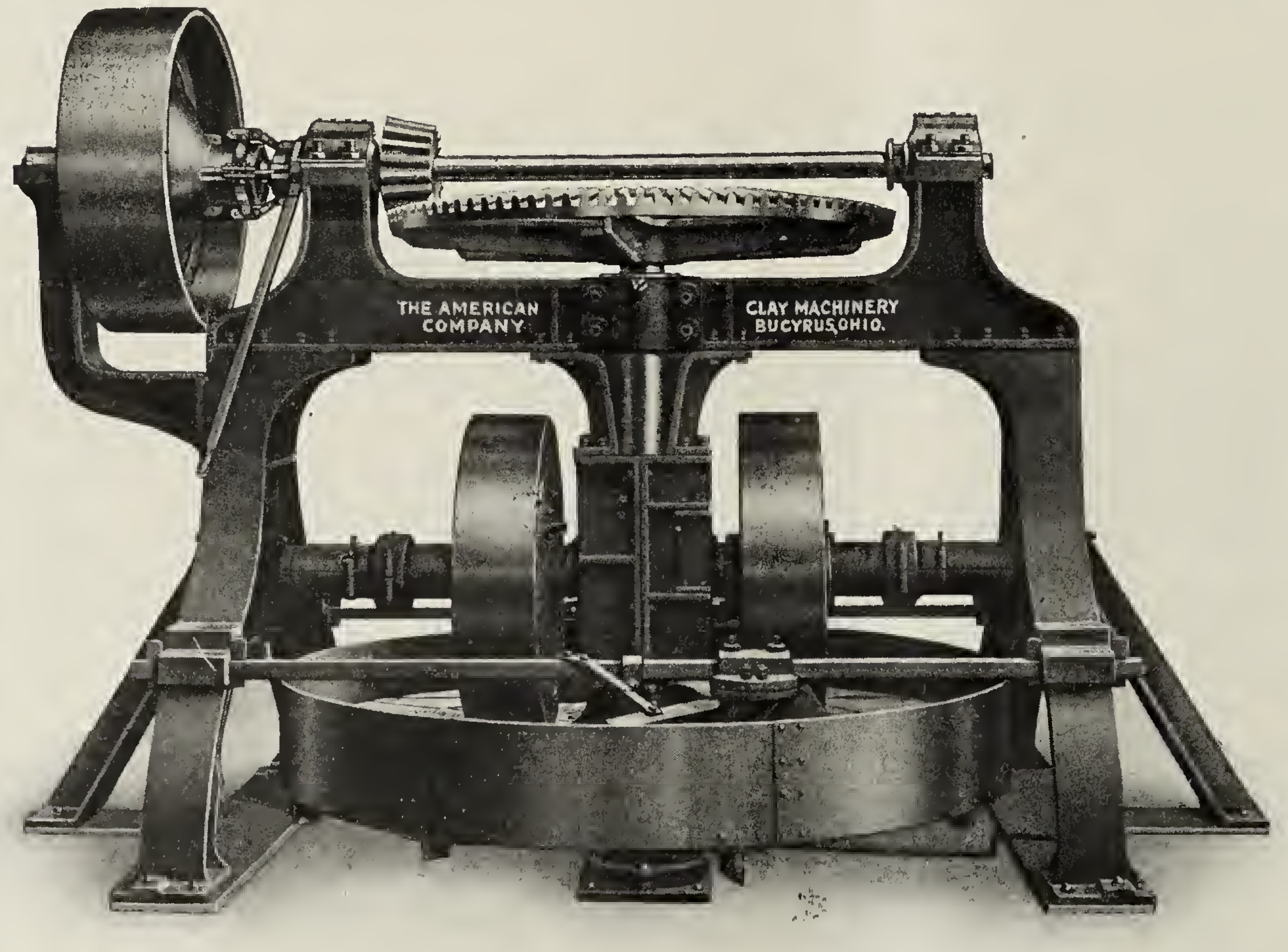


American Motor Driven Nine Foot Dry Pan.



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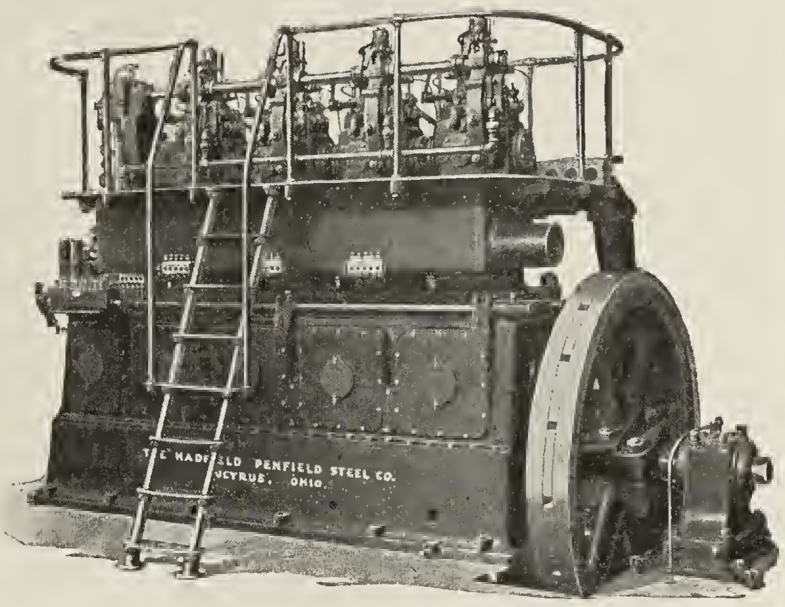

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If you have a haulage problem send us your name and address.

"Over a 2,000 foot grade, ranging from 5 to 7 per-cent, the American Gasoline Locomotive hauls two cars of 2½ yard capacity each, and does it constantly. It works perfectly." Okmulgee Brick Co., Okmulgee, Okla.

THE HADFIELD-PENFIELD STEEL CO.
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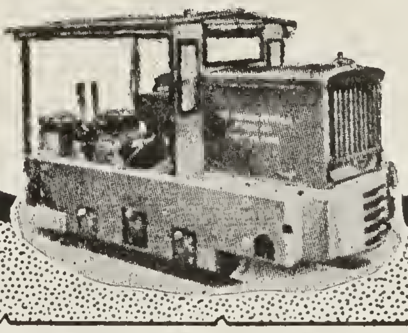

Apprentices and Craftmanship

Editor's Note.—In the June 26 issue of Brick and Clay Record appeared, under the caption above given, the remarks made by D. Knickerbacker Boyd at the recent convention of the American Institute of Architects. Brick and Clay Record is pleased to announce that Mr. Boyd has consented to cooperate with this publication in furnishing from time to time material which will undoubtedly prove of value and helpfulness to the clay industry. Mr. Boyd's views on the importance of encouraging the spirit of craftsmanship and bringing about closer human contact between architect, manufacturer, employer and worker as an important corrollary of the "Apprenticeship Problem" are well known. To set a background for the articles which will follow, there will be presented in this section, for the first time outside of the architectural profession, accounts of the contact established between the architects and the craftsmen of the country which has had such an important bearing on the establishment of apprenticeship classes for bricklayers. The first of these is entitled:

*The Bricklayers' Party**

"THERE WAS an unusual party held in Philadelphia on February 13, 1920. Pennsylvania Local No. 1 of the Bricklayers' Union asked Architects Abel, Boyd, Bright, Medary, Sellers, and Zantzinger to meet with them and talk bricklaying. I never had less hesitation in accepting an invitation.

"These men wanted us to teach them how to read plans; they wanted to know what the different symbols meant with which we adorn our blueprints; how to lay out the work and construct a window-opening from the drawings. I had never given very much thought to the matter, but I was astonished to learn from the men themselves that not one of them ever had anything but a faint idea as to what the architect was driving at.

Bricklayers "Ignorant of Their Art"

"In Philadelphia, the general contractor is the carpenter and his foreman is in charge of the work. The master bricklayer accepts this situation as quite normal, and the bricklayers are discouraged from meddling with things which do not concern them. Anyone who has ever been closely in touch with the actual processes of building knows how effectual are the methods of discouragement employed by workmen or those over them. These men facing us, none of them very young, some of them well along in life, were totally ignorant of their art. They asked us to teach them what we knew. They spoke of the interest they would like to take in their work, of the imbecility of a system which demands that a certain number of brick be laid up each day irrespective of quality of workmanship. Their mortar is prepared for them, they have nothing to say about it, and ofttimes, in order that the contractor may "skin" the job, it is delivered to them in such a condition that good work is out of the question.

Want to Know How to Do Job Better

"Thruout the evening there was not one word said, there was not one question asked except in the line of making the job better. Over and over again they asked, 'Can't you architects fix it up for us so that we can have a little more interest in our work?' Their complaints about the way their apprentices are used by the master bricklayers and all their other griefs were of lesser consequence than the deep resentment they all felt against the system which stultifies every effort toward self-expression in their art. 'We want to make the picture' was the expression used. 'You tell us what you want and we'll make it.'

"As a result of this meeting it was arranged that Mr. Abel should conduct a weekly class on plan reading at the Union Headquarters.

"The problem is to give these men an interest in their work. That is what they ask for and with some imagination, good-will, and mutual forbearance, it can be realized! Let them feel that they are at least to some extent artists, that they are creators and not mere machines, and some of the evils connected with wages will be less difficult of solution."

More About the Bricklayers' Party**

"In the March issue there appeared in the columns of the Journal of the American Institute of Architects a letter by Mr. Bright describing the opening of a class in plan reading conducted by Victor Abel for the members of Bricklayers' Union No. 1 in Philadelphia. The significance of this movement lay in the fact that the bricklayers themselves had felt the necessity for a larger understanding of their craft, and had become conscious of the fact that it no longer appealed as an occupation to their sons and the group of young men who would naturally be interested in it. The wiser men among this group, who were all journeymen, came to the conclusion among themselves that a class could be formed, which would show the men the possibilities of their craft, and that the best way to bring this about would be to familiarize themselves with drawings and specifications, in order that they might have an intelligent knowledge of what they were creating, and why they were creating it.

Start Class for Bricklayers

"These men appealed to D. K. Boyd and thru his efforts such a class was started, and on its opening night was addressed by several architects, as described in Mr. Bright's letter. Every Thursday night during the winter some 200 of these men have come to these classes and have shown a remarkable interest in the work. Just recently Professor Gumaer, of the University of Pennsylvania, told them the history of brickwork, illustrated with slides showing its possibilities from the Babylonian era down to the brickwork of the Georgian period in this country.

"It was my pleasure to speak to these men not long ago on the occasion of the last meeting of the class for this season, and I was impressed with the enthusiasm with which they spoke of the brickwork which had been shown them by Professor Gumaer, and especially with their interest in the examples of very early brickwork used to create decorative surfaces by the use of sculptural forms.

Great Field for Educating Bricklayers

"These men, as stated above, were all journeymen bricklayers, exceedingly diffident and unwilling to express their personal aspirations, but it was obvious in talking to them that here is a great field in which the architects of this country may get in direct touch with the men whose workmanship must always reflect the motive behind it, and I am convinced that, until that motive is guided in the right direction, we can hardly look for great things in the building art. I would therefore urgently recommend to the various chapters that some such classes be started wherever possible, with the hope of bringing the architect more directly in contact with the real workmen actually engaged in executing his work."

---

*By John Irwin Bright, Architect, Philadelphia, in Journal of the American Institute of Architects, March, 1920.

**By M. D. Medary, Jr., architect, Philadelphia, in Journal of American Institute of Architects, June, 1920.

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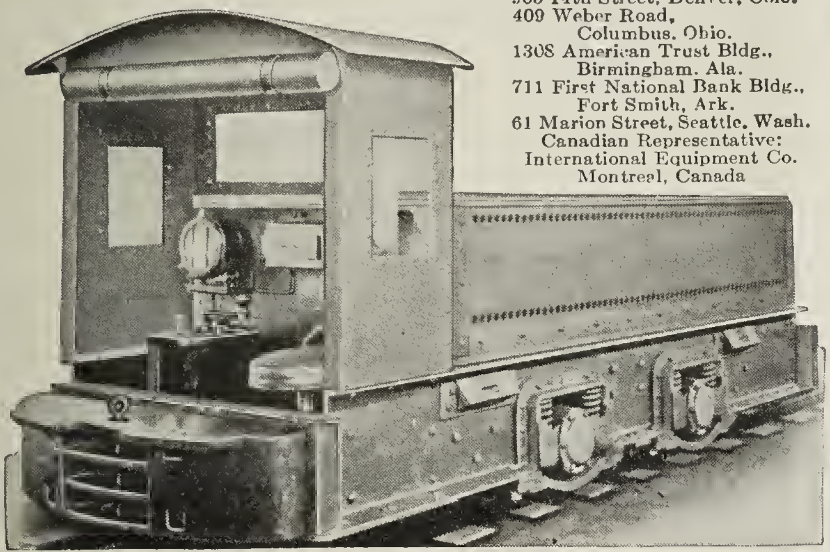

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SIMPLE CHUTE FOR LAYING DRAIN TILE

Ray L. Walker, a Lorain County, Ohio, farmer, has worked out a home-made chute for loading tile which H. L. Rogers, his county agent, says is the simplest and most successful device he has ever seen.

It is simply a tile sized trough which slopes down from the back of the wagon, so that a load of tile can be slid down end to end, and laid uniformly along the ditch, as the wagon drives slowly on.

The trough is a two inch by six inch board eight feet long, with two inch boards nailed to the edges to hold the tile on the chute. The top end of the chute is attached by a half-inch rope to the tail of the wagon so that it slopes about 30 degrees. The lower end is carried on small wheels.

Questions and Answers

Best Authorities in Every Clay Working Branch Are Called Into Consultation—Their Advice Is Free to You, Thru These Columns

Address all communications intended for this department to "Editor Questions and Answers, care of Brick and Clay Record," Chicago

WATER-SMOKING AN UP-DRAFT KILN

1,070. *Tennessee—Will you kindly advise me in detail how brick are dried out in a rectangular up-draft kiln, having furnaces built for coal on the outside of the kiln walls? After using 50 tons of gas coke, my kilns sometimes choke with soot. I am using Western Kentucky coal.*

What I would like to know is, how some of the brick plants manage to burn with the old fashioned up-draft kilns without getting the kiln hot with wood or coke before firing with coal and without choking up the kiln with soot.

I understand that some plants use this style of kiln and with a draft system complete the entire burn with slack. I set my brick 13 over 5 and do not coal them. I especially want to know how plants can burn brick where there is no artificial draft, using bituminous coal to keep up the heat.

This question was submitted to Elias Petts of Baltimore, who is considered an authority on burning in up-draft kilns. Mr. Petts has the following to say: "In the absence of further information as to the size of the brick and the openings between the brick in setting, it is a difficult matter to give full and definite advice to the company as to how to overcome its trouble.

"If its brick are set with plenty of opening between them, we can see no reason why after burning 50 tons of coke on a kiln, there should be any trouble at all with the kiln sooting up. We burn altogether with bituminous coal, using no artificial draft, but we do not use what is known as gas coal, because it is too highly volatile and consequently would choke the kiln before the same is dry or all of the water-smoke removed. We do, however, burn gas coal sometimes in finishing a kiln. The Kentucky coal is a highly volatile coal compared with our coal in the East, with some exceptions.

"Our rule has been in using the high volatile coal to have the kiln hot enough on top to sizzle when water is dropped on it before using this coal.

"If your correspondent uses wood or coke to dry his kiln, and will follow out this rule, as above, and then leave out a few of the platting brick until the fire shows on top, I think

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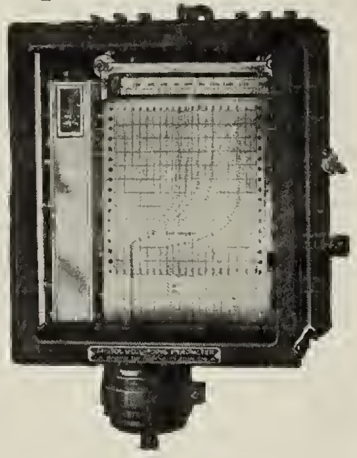
An installation of Bristol Pyrometers will give your burners a chance to produce first class ware by accurately telling them kiln temperatures.

Avoid the dangers of the too rapid, and the waste of too slow a burn. Equip your kilns with Bristol Pyrometers and be assured of accurate indicating and recording.



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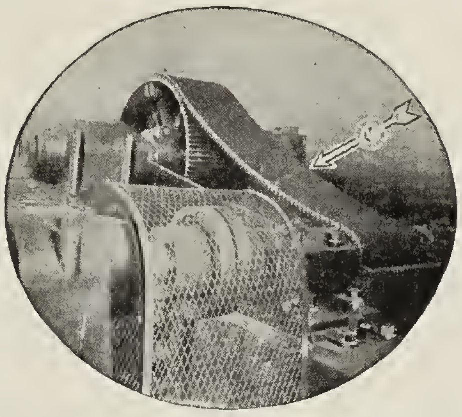

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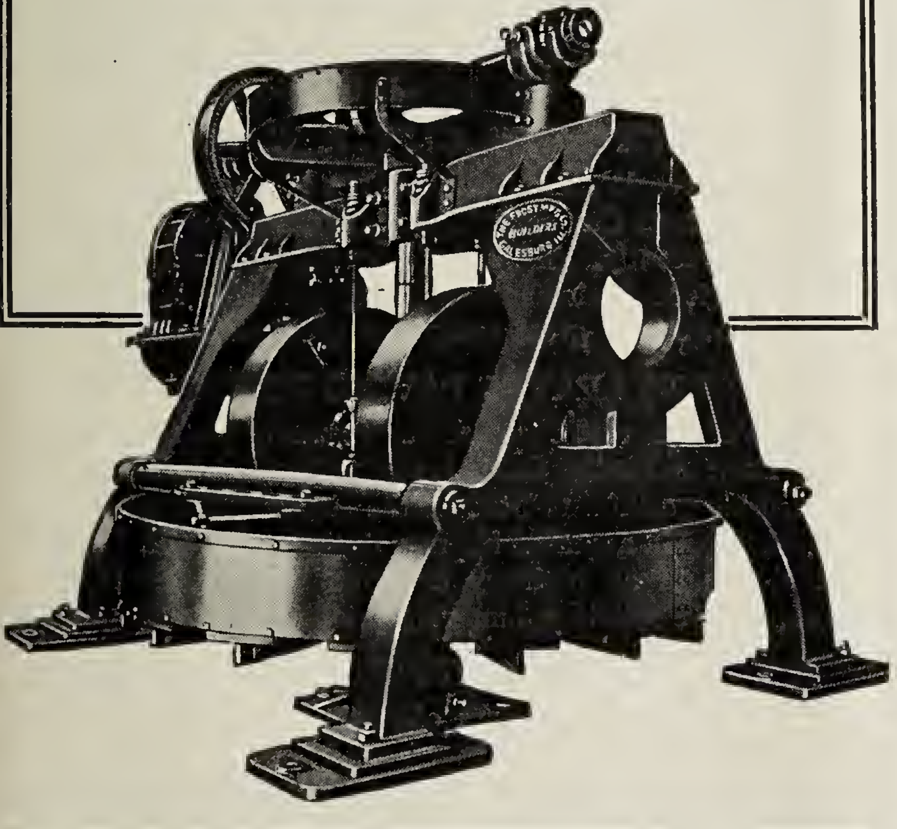

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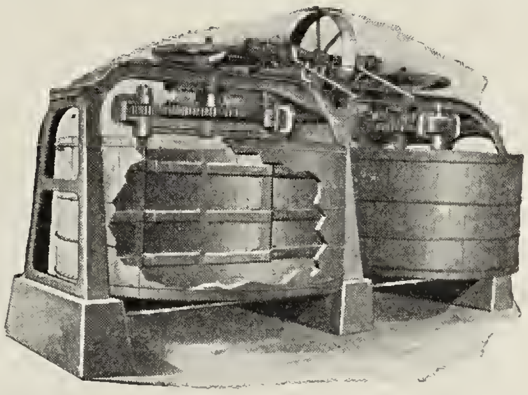

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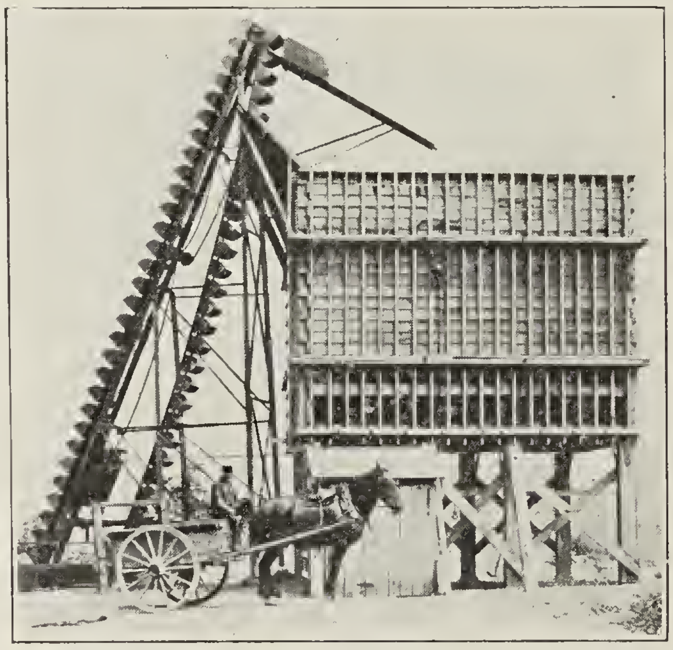

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Fairfield Coal Handling Machinery is preferred by clay products manufacturers everywhere, because it is *dependable* and *economical.*

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The Fairfield Engineering Co.
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there will be no trouble with choked kilns.

"The writer has burned brick all over the country, using all kinds of coal, and where this rule is followed, has never had kilns choke.

"As these kilns have furnaces on the outside, the proper way to handle them, is to cover the grates with fire, as soon as you can, then keep fresh coal near the door, letting the smoke pass over the red hot coals in the rear of the furnace. When this coal at the door has coked and partially burned, push it to the rear of the grates and put fresh coal in the doorway. This is done when the kiln is dried off with coal, and is not necessary if coke or wood is used to dry."

George W. Cook of Syracuse, N. Y., who has also had a great deal of experience with up-draft kilns, says:

"I had the same trouble with kilns choking with soot and overcame it by the method I now use.

"I am firing up-draft kilns with high grade gas coal, and use no other fuel for water-smoking. I have no trouble starting my water-smoking and keep the fires banked down at first with the doors off. My kiln is 28 feet wide and 46 brick high (inside height).

"The last kiln I fired held 420,000 brick. The time of firing was six days. It generally requires eight or nine days, the time varying according to weather conditions, man firing, grade of coal used and even mixture of clays."

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

DEATH OF J. F. WEIGAND

J. F. Weigand of the Northwestern Terra Cotta Co., Chicago, has died. Mr. Weigand has been connected with the terra cotta industry in the middle West since its infancy. He was one of the old time terra cotta pioneers, having been in the business more than 35 years.

BALES ELECTED TO SCIENCE ACADEMY

C. E. Bales, chemist for the Louisville (Ky.) Fire Brick Works, has been elected to membership in the Kentucky Academy of Science. Mr. Bales is to be congratulated.

DEATH TAKES CAPT. R. W. HUNT

Capt. Robert W. Hunt, founder and president of the Robert W. Hunt Co., consulting engineers, died in his home in Chicago recently. Mr. Hunt's operations in the engineering field extended also into the clay products industry and he was known by a great many clay products manufacturers.

PERKINS LEAVES PAVING BRICK ASS'N

J. M. Perkins, of Towanda, Pa., formerly district engineer of the Eastern Paving Brick Manufacturers' Association, has resigned his position to become the city engineer of Greensboro, N. C. He assumed his new duties on July 1. He will have charge of all highway and outside work of the city. His experience qualifies him very well for his new position.

F. A. GRIFFIN DIES

Frank A. Griffin, 77 years old, who for many years was a resident of Rich Hill, Mo., where he was officially identified with the Rich Hill interests of the W. S. Dickey Co. of Kansas City, Mo., died recently at his home in Kansas City. His death is believed to have been hastened by injuries that he received in an automobile accident in Kansas City about a year ago and from which he never fully recovered.

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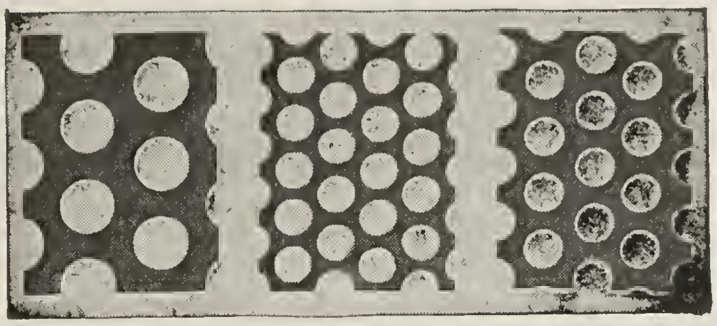

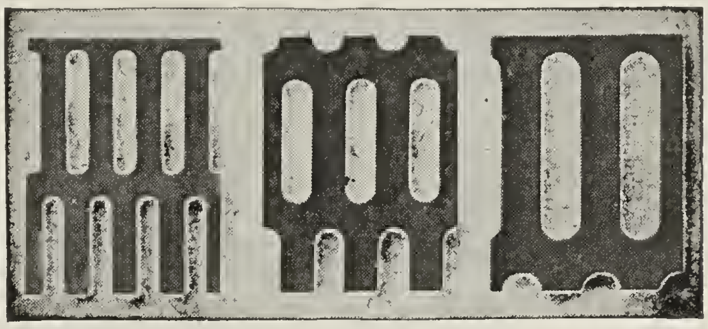

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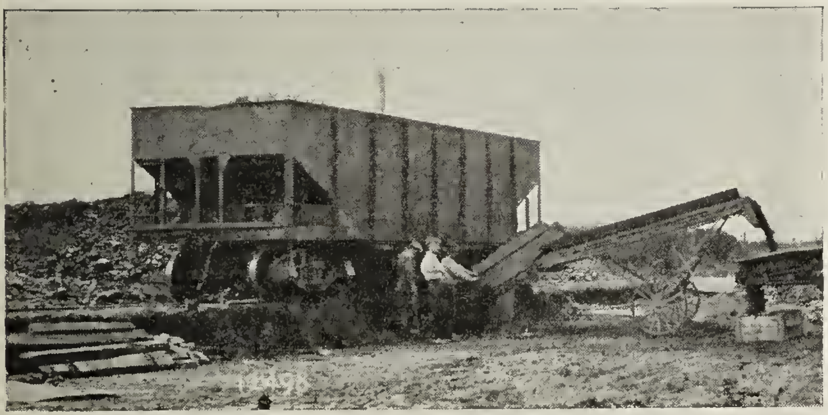

How Strong Is Your Back?

Suppose *you* had to unload a car or two of coal by the hand shoveling method? "Ouch! Oh, my back!" We venture to remark that your language would probably excel your back in strength. And it is all unnecessary—all too expensive—when you can do it so easily, so efficiently with a

ROBBINS

Portable Car Unloader

It will load directly into a motor truck or wagon, filling the largest conveyance in a few minutes or it can be extended to serve a storage pile by the use of a separate portable conveyor as shown above.

The Robbins Portable Car Unloader can be operated either above or below the rails. It will handle 30 or more tons per hour which means greatly reduced handling costs and elimination of demurrage charges. Thus it pays for itself over and over again.

Want the Facts?

They are yours for the asking. Remember that the Robbins Portable Car Unloader does not cost a lot of money to buy but it saves a lot of money when used. Think it over. Then write for the details.

Robbins Machinery & Supply Co.

444 W. Grand Ave. Chicago, U. S. A.

"Machinery for Moving Merchandise"

CAUCASIAN

OXIDE MANGANESE

Powdered—Granular
For Speckled Effects

PRECIPITATE

CARBONATE BARIUM

For Prevention of Scum
Thereby Producing
Deeper and Richer
Color

THE
ROESSLER & HASSLACHER
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FACE BRICK VALUES
Increased By—
NATIONAL MANGANESE

—enabling light burning and buff brick to be made into beautiful, high priced French Grays

—unusual speckled effects produced.

—red burning clays made to produce a very popular brown shade.

Write for samples and prices.

National Paint and Manganese Co.
Lynchburg, Va.

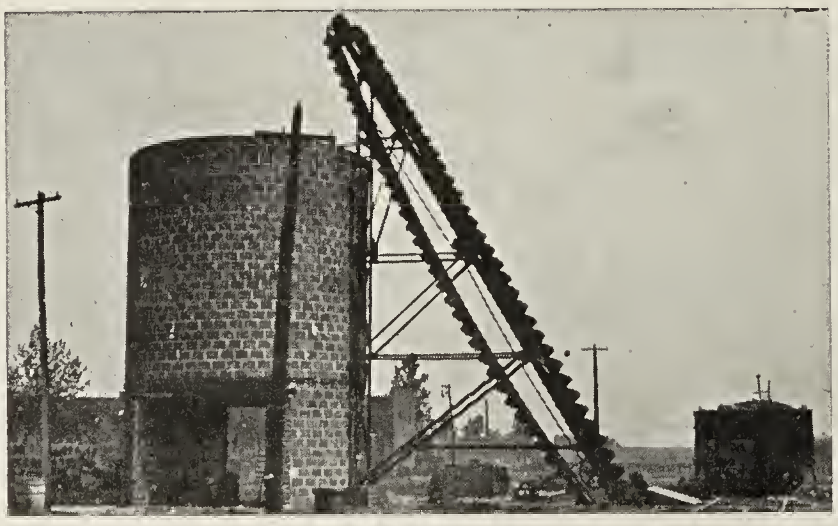
Miners and Grinders For More Than a Quarter Century

SUNBURY
AUTOMATIC CAR UNLOADER

Loads or unloads coal at the rate of 30 to 50 tons every hour. Only one man needed.

Let us tell you what other clay plant operators are doing with the Sunbury in saving time, money, and labor.

The Sunbury Manufacturing Co.
Sunbury, Ohio



Mr. Griffin was well known among the business men of Rich Hill and was well liked, being progressive and capable.

RAINEY ENTERTAINS KIWANIANS

The Beaver Falls Kiwanis Club of Beaver, Pa., was entertained at a recent dinner meeting at the Grand Hotel, by L. B. Rainey, superintendent of the Fallston Fire Clay Co., who made an interesting talk illustrated with motion pictures. Rev. Floyd W. Barr gave a short talk relative to the visit he made to the Kiwanis club at Indianapolis recently. One interesting feature of the evening was the presenting of attendance prizes. Two were awarded, one going to F. Summer Hunt and the other to M. A. Illing.

GREAVES-WALKER WITH STEVENS BROS.

A. F. Greaves-Walker, president of the American Ceramic Society and formerly production manager of the American Refractories Co., has recently been elected to the board of directors of Stevens Bros. & Co., manufacturers of clay products at Atlanta, Ga., and will be associated with this firm in the capacity of vice-president and manager of operations. Mr. Greaves-Walker is a nationally known authority on refractories. During the past ten years he has done the refractory field a great deal of good and has demonstrated the fact that a good technical man is an asset to the industry. Many practical problems have been solved by him and the South should feel elated upon obtaining the services of an engineer of so high a standard.

Stevens Bros. & Co. have been engaged in manufacturing clay wares since 1861. They are the largest fire brick producers south of Kentucky and utilize the bauxitic and kaolinitic clays that abound in the region where the company is operating. There has been some agitation regarding the use of Georgia clays and their ultimate possibilities, so it will be with no little interest that the industry will read of Mr. Walker's new connection and wish him every success in his work.

A. F. GREAVES-WALKER

RICHMOND INCREASING CAPACITY

The Richmond Pressed Brick Co. has been more than busy trying to keep up with its run of orders while at the same

The Dawn of a Better Day in Brick Burning

When Smokeless Oil Burners were first offered to the Clay Industry they naturally met with many preconceived notions and prejudices.

They were a new thing to the trade and subject to all the suspicion and criticism that a new idea excites.

They made their way by test after test in comparison with other burners already established in the industry and they won because of their absolute superiority.

SUPERIOR RESULTS—less fuel, less labor, shorter burning time, less damage to the arches and brick work, better burned brick—These are the reasons why Smokeless Kiln Burners have forged ahead to their present pre-eminent position.

The Smokeless Oil Burner Co.
Bucyrus, Ohio, U. S. A.

TANKS PUMPS METERS STRAINERS

Made for maximum service not merely the average

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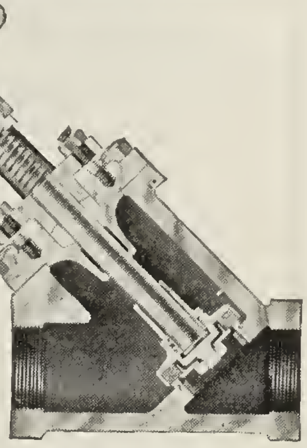

Sectional view, Fig. 296, screwed, Jenkins Standard Iron Body "Y" or Blow-Off Valve.

For thick fluids, and for Boiler Blow-OFF

Because of its full straight opening, this valve is widely used for boiler blow-off service, and in lines carrying thick fluids, or liquids containing sediment.

Fitted with Jenkins *renewable* disc and *renewable* seat rings.

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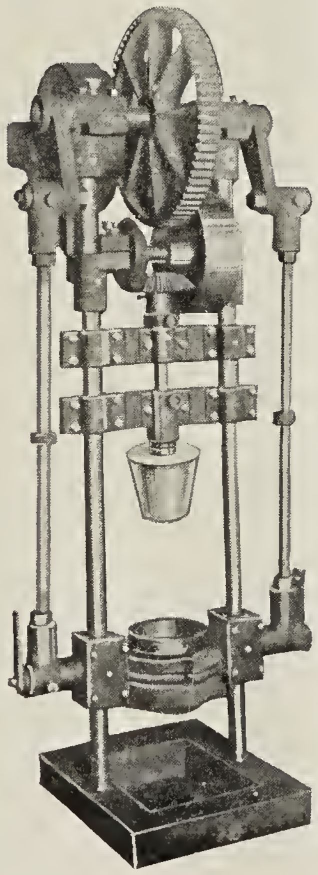
SINCE 1864

2850-J

"HILLFINGER" POT MACHINE

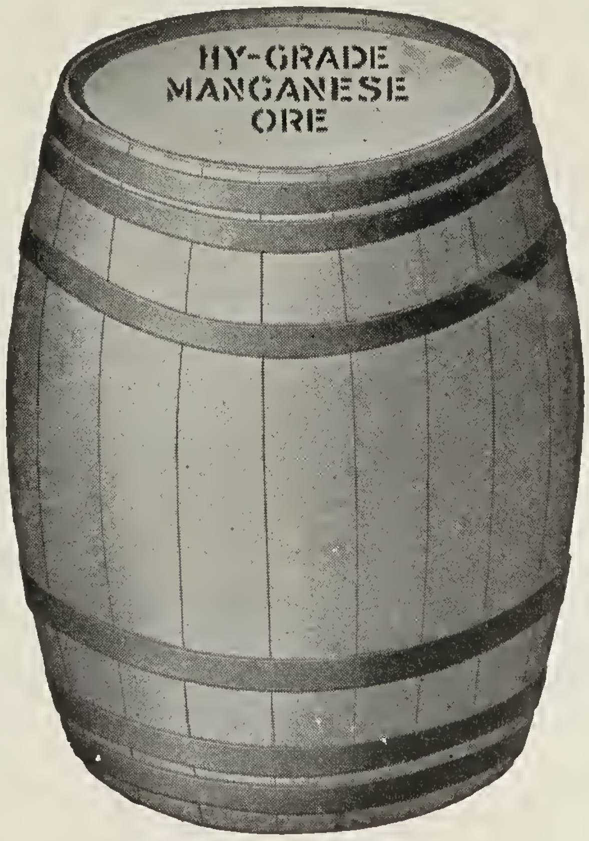
This is the Hillfinger Pot Machine, designed by potters of experience covering fifty years in the pottery business. Their machine, of which this is an improved model, has been in use in their plant for over thirty years.

One of the most important features of this machine is BEING OPEN FRONT AND BACK, the two operators being on opposite sides of the machine, and not in one another's way. This permits of one board being filled while the other is placed on drying rack.



Write for complete information

HIBBARD GAS ENGINE CO.
HUDSON FALLS, N. Y.



HY-GRADE MANGANESE CO.
WOODSTOCK, VA.

Miner and Grinders

Especially Prepared for Brick Making

Announcement

The American Dressler Tunnel Kilns, Inc., will have a message for the clay products industry in the near future which will be of considerable interest.

The message will appear in this paper at the earliest possible moment. In the meantime we are, as usual, ready to serve you.

American Dressler Tunnel Kilns, Inc.
1740 East 12th St. CLEVELAND

ROBINSON'S
DRYER CARS

Dryer Cars
Rack Cars
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Kiln Bands
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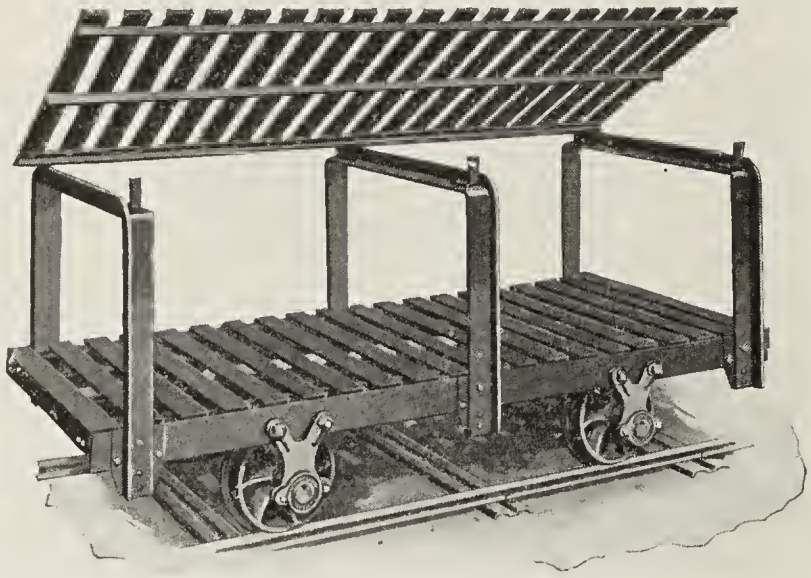
Designed for every purpose and built in any size

Ask for complete information on Robinson equipment.

FRANK H. ROBINSON
Dryer Cars and Clay Working Equipment
Factory and General Office: 918 Behan St.,
N. S. PITTSBURGH, PA.



time overhauling and enlarging its plant located at Point Richmond, Cal. The building program that is continuing warned the company that it has become necessary to enlarge, so an assortment of new machinery is being installed.

NEW DENVER COMPANY FORMED

The General Shale Corp. has been incorporated in Denver, Colo., with a capital stock of $20,000, it is said, by A. M. C. Sterne and Bryant Mathews.

BUYS ILIFF, COLO., PLANT

Albert White of Longmont, Colo., has purchased the Iliff (Colo.) Brick & Tile Co., it is said. This plant has been idle for two years and as a result is in need of considerable repairs. Mr. White will make the necessary repairs and plans to build a dryer. The plant will be put into operation at an early date.

LA JUNTA PLANT BEING CHANGED

Since S. A. Kammerlohr has come to La Junta, Colo., to take charge of production at the plant of the La Junta Clay Products Co., a considerable amount of remodeling has been done. His first step was to remodel the engine rooms and machinery thruout. New boilers have been installed and some modern machinery purchased. Mr. Kammerlohr, who it is said is the originator of the polychrome brick, has begun manufacturing these brick at the La Junta plant. They are made in 27 different shades. The large variety of clays which are found in the company's deposits, enables it to manufacture practically every type of heavy clay product, including refractories. Mr. Kammerlohr plans to build a Hoffman continuous kiln as soon as possible in order to cut down fuel and labor costs.

BRICK COMPANY FORMED FOR $1,000,000

The Torchlight Brick & Tile Co., of Wilmington, Del., has filed with the Colonial Charter Co., it is said, their charter with a capital stock of $1,000,000. The new company has formed for the purpose of mining clay.

McDONALD INSTALLING MODERN MACHINERY

The McDonald Brick Co., Inc., at Ludowici, Ga., is installing a modern steam dryer, a clay feeder, and steam shovel. A new seven ton Cummings locomotive has also been purchased by the company.

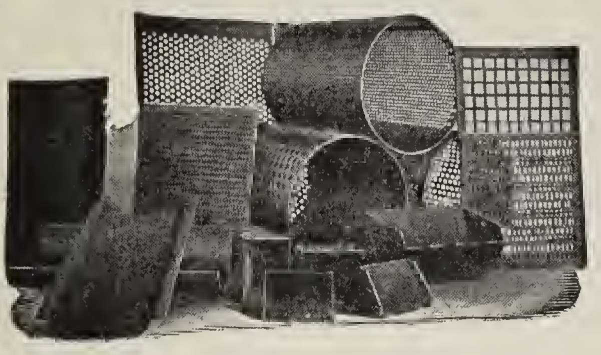
STANDARD MODERNIZES PLANT

Old machinery and methods at the Standard Brick Co., Macon, Ga., have been thrown out to make room for modern equipment and improved methods and principles. Alteration work has practically been completed and the company is again operating on a large scale production basis, after having been handicapped for some time while remodeling work was in progress.

DIXIE FIREPROOFING INCORPORATES

The Dixie Fireproofing Co. was incorporated at Macon, Ga., the early part of July with a capital stock of $25,000, and authority to increase this to $200,000. The company is composed of W. P. Stevens, who is president, and one of the best known brick manufacturers of the South, and R. Holmes Mason and Washington Dessau, all of Macon. The Dixie Fireproofing Co. is an established enterprise but heretofore had not been incorporated. Coincident with the incorporation comes the announcement of the new product the company is putting out under the trade name of Super Fire Brick. It is the third member of the company's brick family, the other two being known as the Dixie and the American Fire Brick. Extensive experiments have been carried out under the personal direction of Mr. Stevens in the

HENDRICK SCREENS
FOR ALL PURPOSES



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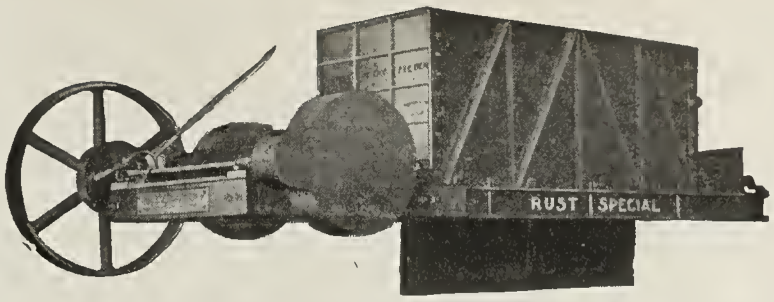

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with the
MARION
"RUST SPECIAL"
Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing
Rust Feeder and full line of
Marion clay plant equipment.

Marion Machine Foundry & Supply Co.
P. O. Box 395
MARION, INDIANA

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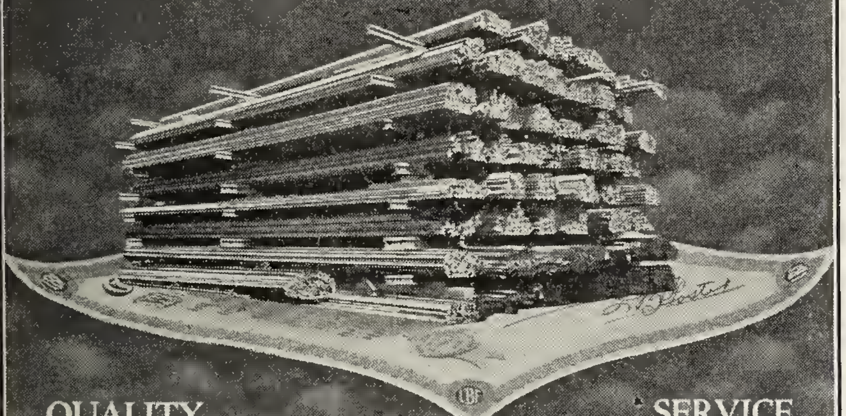

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below price of new rails.
Shipped subject to inspection
and approval at destination.
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Given Immediate Attention
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CENTURY BUILDING CLEVELAND, OHIO.
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We offer our services, as your engineers, on the design or construction of:

Tunnel Kilns.
Periodic or Compartment Kilns.
Insulation of Existing or New Kilns.
Fuel Systems.
New Plants and Re-Conditioning of Old Plants.

Special Installations for your particular product.

ENGINEERS
ROBERTSON-PEASE CO.
CENTURY BUILDING CLEVELAND, OHIO.

VEELOS

TRADE MARK REGISTERED U.S. PAT. OFFICE
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VEELOS
Genuine Balata Belting
The Ideal Belt for Brick Plants
Waterproof—Wearresisting
Non-Stretching—Non-Slipping
Durable—Reliable—Economical
Try one VEELOS. QUALITY will tell
You will always use it

The Standard Belt of the World
MANHEIM MANUFACTURING & BELTING CO.
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Pan Feeders
Bucket Elevators
Gravity Elevators
Brick Barrows
Tile Barrows
Sewer-Pipe Barrows
Gigs,
Etc.

STEVENSON

production of the new brick, and it has undergone a rigid test at the Ohio State University, and pronounced by that institution well within the limits of the No. 1 refractory class. Production of the plant has been going on apace, Mr. Stevens stating they are so well ahead it will be some months before they can catch up with orders on hand. As a result of the incorporation improvements are to be made and the plant enlarged.

ORDERS WAY AHEAD OF CAPACITY

The brick industry in the Atlanta, Ga., district still is from 30 to 60 days behind in orders, with all plants operating at capacity but unable to catch up with demand. The industry as a whole during the first six months of this year experienced the most prosperous period in its history, so far as the Southeast is concerned, manufacturers in Atlanta are agreed. Volume of orders has held up steady since the first of the year, and there has been no time at which the plants were not well sold ahead.

The price tendency appears to be comparatively stable and no material changes are looked for in the immediate future. There have been some declines, however, in other building materials in this district.

ILLINOIS BUYS NEW CLAY LANDS

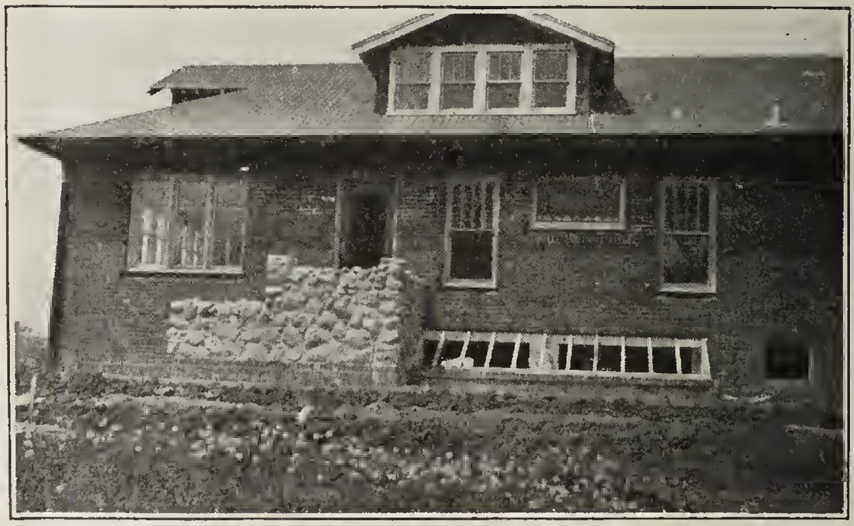
It has been reported that the Illinois Brick Co., Chicago, Ill., has purchased 111 acres of clay lands in Thornton, Ill., just south of the Chicago city limits. The land was bought from the Pullman Land Association and will be used by the company to furnish raw materials to its yard No. 35, which is located near the deposits.

CONCRETE MANHOLES NOW PERMITTED

At the instance of J. J. Sloan, president of the board of local improvements, Mayor Dever of Chicago, Ill., approved construction of concrete manholes and catch basins. As a result of this approval there is a possibility that the use of brick for this construction may be abandoned, at least to a large extent. Mr. Sloan is now directing his efforts to secure the approval of the use of concrete in sewer building.

HOUSE WITH BRICK BASEMENT

Brick basements which were once fairly popular and quite generally used, have in late years lost much of their prestige, due mainly to the fact that its competitor, concrete, is so easily handled and so readily adapted to any design or condition. The practice of building brick basements, however, has not been entirely abandoned because there are still many people who know the true worth of brick. The photograph shows a house constructed in Park Ridge, Ill., which is built of brick all the way from the basement to the roof, with the exception of a small piece of stone around the steps. This building cost about $12,000.



This House Has a Brick Basement.

A PREVENTATIVE

No. 305
$4.25 per Doz.
$48 per Gross Pair

Supply your men with Des Moines Glove Co. Hand Pads and prevent dissatisfaction resulting from unpleasant working conditions.

Men can't work efficiently with sore hands. Make working conditions more agreeable around your plant and watch dissatisfaction vanish and labor turnover decrease.

DES MOINES GLOVE
& MANUFACTURING CO.
DES MOINES, IOWA

No. 300, $7.80 per doz. $90 per Gross Pair

FREE

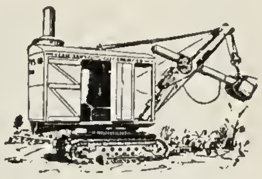
To any manufacturer whose men have not been using Des Moines Hand Pads who will clip out the Hand Pad shown here and mail it to us with his letterhead we will send FREE a pair of Des Moines Pads.

"WITH ONE MAN and one ERIE Shovel, we easily get our 300 cubic yards per day. This is sufficient to take care of the daily output at each of our 3 plants, but we could easily increase this output if necessary. In our opinion, the ERIE is *the* shovel."—*Edw. T. Conley, Sec'y, Bradford Brick and Tile Co., Bradford, Pa.* (Owners of 3 ERIES.)

For larger output than the above—500 to 600 cubic yards per day, or more—it is advisable to use two men on the shovel. But when your plant requirements are not too great an ERIE and one man will serve.

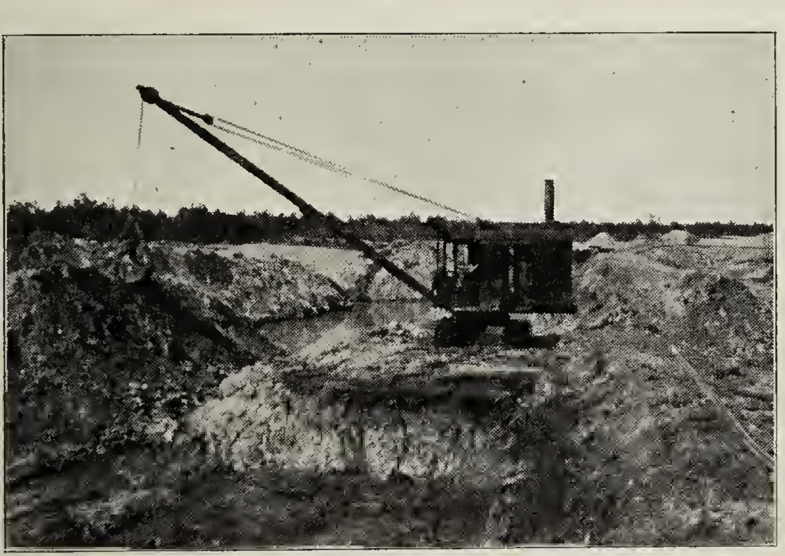
We will be glad to send you data showing just what you can do with the ERIE. Write us.

ERIE STEAM SHOVEL CO.
Formerly Ball Engine Co.,
Erie, Pa., U. S. A.
Builders of ERIE Steam Shovels and Locomotive Cranes



ERIE Shovels can be had with broad tired traction wheels, standard gauge car wheels, or on ERIE lubricated caterpillar type mounting. All interchangeable on the same truck frame.

ERIE Revolving Shovels ERIE Steam Shovel Co.



Osgood ¾ yd. H. D. with Clamshell in Clay Pit

Reliability-Service-Osgood

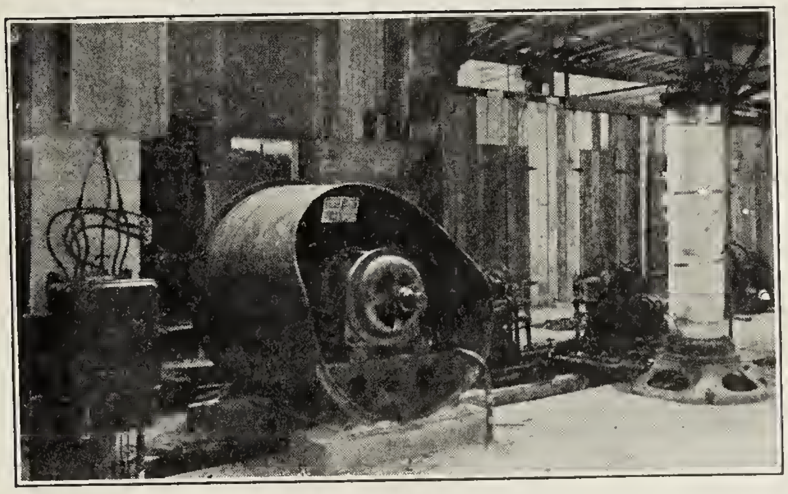
Three words of great importance to the user or prospective user of Steam Shovels. OSGOOD Steam Shovels are built reliable—right in our own factory—to give long and satisfactory service in the field.

An OSGOOD can only be fully appreciated after it has been seen. Watch one at work. Our new Bulletin 231 will tell you more about them.

¾—1 and 1¼ Revolving Type Steam Shovels, Clamshells, Draglines, 1½ to 6 yd. Railroad Type Steam Shovels.

The OSGOOD Company
MARION, OHIO, U. S. A.

Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

Ask for information regarding T-J System of Burning Oil.

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Furnace Engineers Established 1898
PITTSBURGH, PA.
New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis

AN ALL AROUND
SAVING

A Russell Kiln installation will bring efficient methods into your plant.

—Saves Labor
—Increases Production
—Makes Uniform Product
—Decreases Fuel Cost

Submit your burning data to our engineers as a basis for an intelligent estimate of the savings possible.

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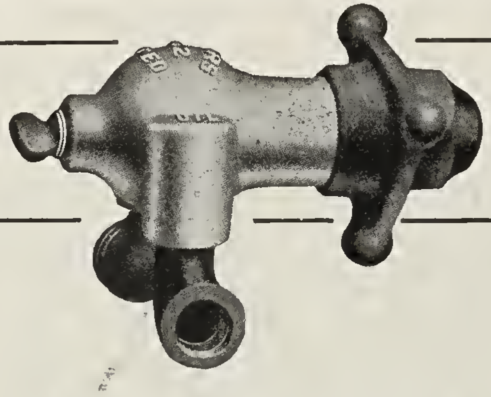

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"SCHURS"
Oil & Gas Burners for Complete Combustion

With the scientifically designed Schurs Oil Burners you are assured of complete combustion, a uniform heat and consistent performance.

Join the growing family of Schurs users.

Write for Schurs' Bulletin covering the product you manufacture

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SCHURS OIL BURNER COMPANY
5332 Santa Fe Ave. Los Angeles, Calif.

ALBION PLANT AGAIN OPERATING

After a shut down of approximately three weeks, which time was utilized in making repairs and installing new machinery, the Albion (Ill.) Brick Co. has resumed operations. According to reports the remodeling work was done at a cost of approximately $12,000. A new kiln will be built in fall and at that time other repairs and additions will be made. Business is very good at the present time and orders on the books will keep the plant busy for several months.

PURINGTON TO BUY BARR CLAY CO.

Directors of the Purington Paving Brick Co., Galesburg, Ill., have voted to purchase the Barr Clay Co., near Streator, Ill., on the Vermilion river, and have called a special meeting of stockholders July 25 to submit the proposition to them for approval. The Barr Clay Co. is the second largest paving brick manufacturing company west of Chicago, with a capacity of 50,000,000 brick a year. The company has been in operation 30 years and has an extensive clientele in northern Illinois, Chicago, and southern Wisconsin.

The Purington Paving Brick Co. stockholders will also be asked at this special meeting to authorize the increase of the capital stock of the Purington company by issuing 5,000 shares of seven per cent. cumulative stock at $100 par and increasing the common stock from $1,000,000 to $2,000,000. The consolidation will combine the biggest paving brick manufacturers west of Chicago and give the Galesburg company a commanding position in the field. Frank G. Matteson is president of the Purington company; Omer N. Custer, vice-president, and W. H. Terrwilliger, secretary-treasurer.

RIDGEVILLE COMPANY DISSOLVING

The Ridgeville (Ind.) Tile & Brick Co. has filed a preliminary certificate of dissolution, it is reported.

HYDRAULIC STARTS JEFFERSONVILLE PLANT

The Jeffersonville (Ind.) Hydraulic-Press Brick Co., which was a long time in starting its new plant in that city, finally got underway when demand became really good some months ago, and is now turning out a lot of brick. The company so far has marketed its product thru W. E. Whaley, of Louisville, Ky., who has been giving it all the business it could handle.

WILL EXHIBIT AT STATE FAIR

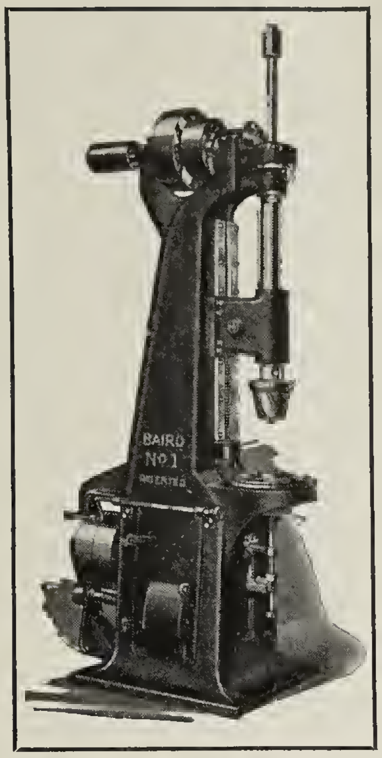
Several Kentucky clay products companies are planning to have exhibits at the Kentucky State Fair, which will be held in September, probably starting on Monday, September 10. Such houses as the P. Bannon Pipe Co., Coral Ridge Clay Products Co., and W. E. Whaley have been making exhibits for two years or more in the new Merchants and Manufacturers Building; while the Southern Brick and Tile Co., has had a trenching machine in action, setting drain tile and showing the farmers how it is done.

SIOUX CITY PLANT STARTS

Announcement of the opening of the new brick plant, taking the place of that one which was destroyed by fire February 11 of this year, has been made by D. P. Mahoney, president of the Sioux City Brick & Tile Co. Mr. Mahoney stated that the new plant had an increased capacity of 15 per cent. over that of the old one.

Electrically driven, the new unit is equipped with the latest brick machinery and has two Haigh continuous kilns, each capable of turning out 60,000 brick daily. Mr. Mahoney explained that provisions for connecting up all plants so that continuous processes may be used, will take place in the near future.

Ask the User



Better Than Ever

Baird Pottery Molding Machines need no special introduction. They are known the world over by all manufacturers of plain pottery as the only real machine built for producing this class of ware. A talk with any manufacturer using these machines will convince you. Built in four sizes. For particulars address,

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Ideas Are Money

THAT is why "101 Ideas for Improving the Clay Plant" shall be worth real dollars to every owner, operator, manager or superintendent of a clay products manufacturing plant.

This is a book of 128 pages, containing exactly what its title indicates—101 bona fide ideas fully illustrated. It presents no theories of cost reducing or untried ideas which might seem good, but every one of the ideas presented has been tried out in actual service in the clay plant.

Only a limited number of copies has been printed. Get yours now!

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A Consistent Clay Mix Assured

A Schaffer Poidometer will relieve your production routine of one more variable element.

The Poidometer weighs and mixes clay and water by means of a roller supporting the middle of the feed belt. This roller is connected to a walking beam one end of which is in the form of a scale beam.

Keep your clay mix consistent and your drying and burning losses will decrease. Keep your moisture content the same in the green ware and one kiln may be burned the same as the previous one.

See Our Catalog in the Clay Products Cyclopedia

Write for complete list of successful Poidometer installations and visit the one nearest you. It will pay.

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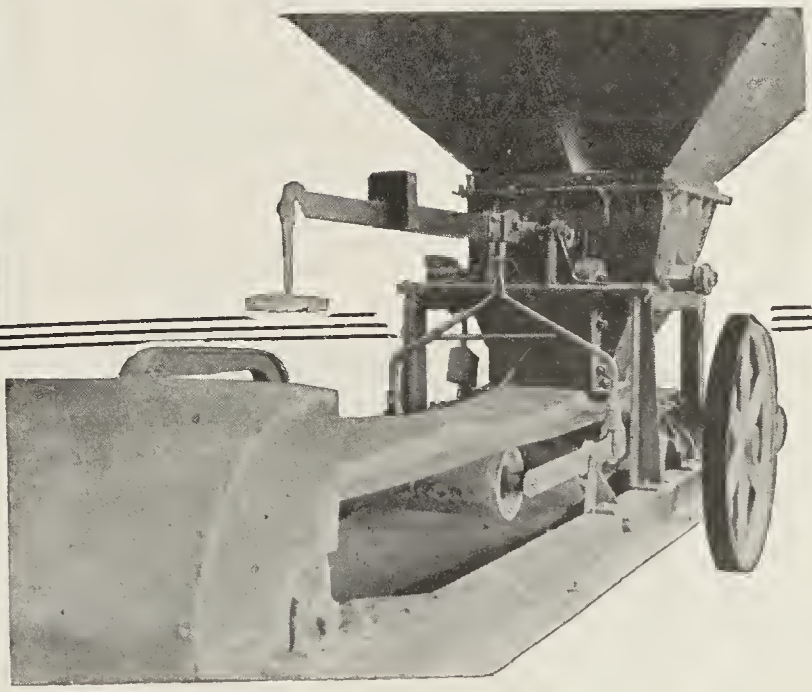
2828 Smallman Street
PITTSBURGH PA.



"—we are saving our kilns"

THE Independence Paving Brick Company of Kansas ship a million No. 1 paving brick a month. Nineteen kilns are working all the time. Here is what they say about Wilson-Maeulen Pyrometers:

"The figure you see is our head burner, Dewey Taylor, who started ten years ago as a sand boy. He is an asset today to himself as well as the plant.

"We find the installation of Wilson-Maeulen Pyrometers the best investment we have made. Our overburns and underburns are nil, and while we have not data enough, we think we are saving considerable fuel. We are loading, as near as we can figure so far, 92% No. 1 brick from kiln to car and we think that we can increase this 2% more. Our shale needs between 2200 and 2300 degrees of heat for complete vitrification. This is hard on the kilns, but with the installation of this system, we are saving our kilns.

"We have 19 hooked up now and are shipping a million No. 1 pavers a month * * * the future for paving brick is unlimited as it is being demonstrated every day that paving brick laid on substantial base will outlast any other type of paving, especially for heavy traffic."

Our Engineering Department is at your disposal—without obligation, of course—for advice, estimates or operating data.

WILSON-MAEULEN CO.
Makers of Rockwell Hardness Testers and Wilson Maeulen Recording Pyrometers
731 EAST 143RD ST., NEW YORK

BOONE RENEWS INCORPORATION

The Boone (Ia.) Brick, Tile & Paving Co. recently has filed renewal of incorporation with the secretary of state. The company is capitalized for $100,000. The following officers and directors are mentioned in the amended article: H. F. Graefe, president; W. C. Strock, vice-president; W. H. Brecht, secretary-treasurer. In addition George A. Kraetsch, Jansen Haines and F. P. Carr, are directors.

TO BUILD PLANT AT ANAMOSA, IA.

Anamosa, Ia., capital has subscribed to practically all of the $3,500 seven per cent. preferred stock of the Center Junction Brick & Tile Co., thus fulfilling the condition upon which the removal of the plant from Center Junction to Anamosa was made dependent. The company has agreed to take a 25 year lease on a factory site, begin building November 1, and have its plant in operation May 1, 1924. A force of 15 men is to be employed. R. S. Robie is president and A. C. Robie, secretary-treasurer of the company.

PROPOSE LOWER IOWA RATES

Freight rates on brick and related articles taking the same rates from Adel, Redfield, Carlisle, Van Meter, Ottumwa, Boone and Fort Dodge, Iowa, to points in South Dakota east of the Missouri River have been found unreasonable and prejudicial in comparison with rates from Chicago, Galesburg and Peoria, Ill., St. Louis, St. Paul and points taking the same rates to the South Dakota territory, the Interstate Commerce Commission has been advised in a tentative report by Examiner J. P. McGrath on complaint brought by Des Moines brick manufacturers. Reasonable maximum rates and a non-prejudicial relationship of rates is prescribed in the proposed report which has been submitted for approval of the Commission.

MURRAY WAREHOUSE BURNS

The warehouse of the Murray Roofing Tile Co., Cloverport, Ky., has been damaged by fire to the extent of $15,000.

THREE MONTHS BEHIND ORDERS

The Coral Ridge Clay Products Co. is operating at capacity, manufacturing brick and hollow building tile. Orders on hand are equal to about 90 days capacity.

COMPANY FORMED AT MADISONVILLE

The Atlas Clay Products Co. has been incorporated in Madisonville, Ky., by E. H. Pennick, N. M. Mitchell and A. F. Fox.

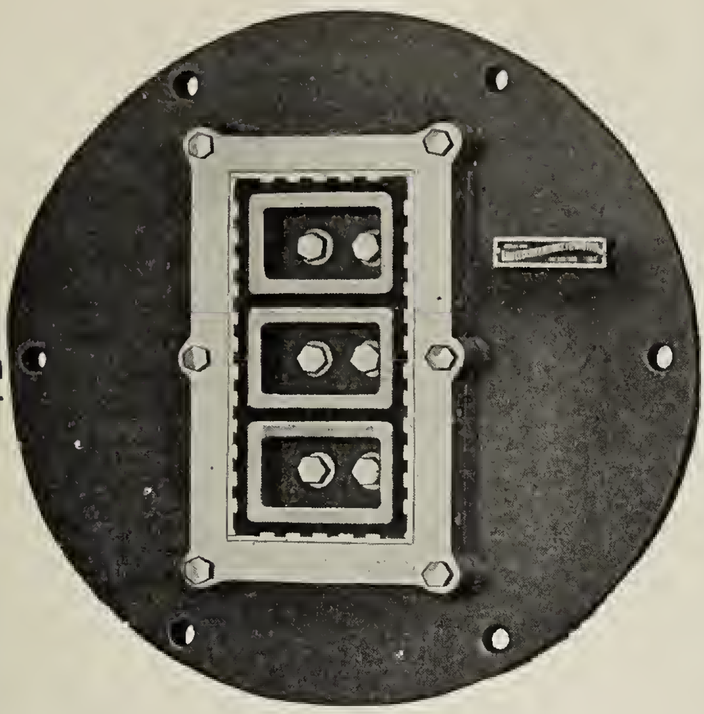
PROGRESS WILL START UP SOON

P. M. Crane, of the Progress Pressed Brick Co., reported to Brick and Clay Record that the company had recently secured some good jobs and would start running again as soon as some new equipment was installed, including new devices for making rough textured brick by dry press methods.

PROSPECTS GOOD IN LOUISVILLE

The brick industry in Louisville, Ky., is humming and the general outlook is for a full capacity business until cold weather slows up demand. Local manufacturers report that they have recorded sales equal to two or three months' output, but are able to take on a little business here and there within the schedule, altho contracts in hand are taking almost all production.

While new business is not quite as active as it was there are still a good many small contracts coming out, and a considerable amount of business is in sight, altho



DIES WITH PRECISION

Louisville Dies incorporate the utmost precision in manufacture.

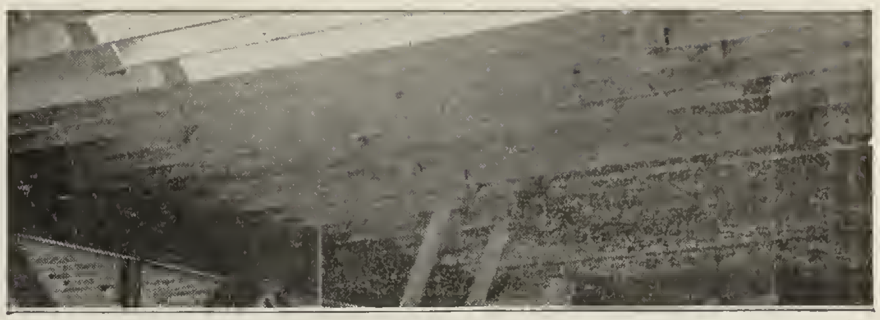
Built into every die along with accuracy, are strength and wear-resisting qualities, which have given the name "Louisville" a reputation for permanence in keeping your ware to size and weight.

Send our engineers all possible plant data. We will figure your requirements and design your dies to meet them.

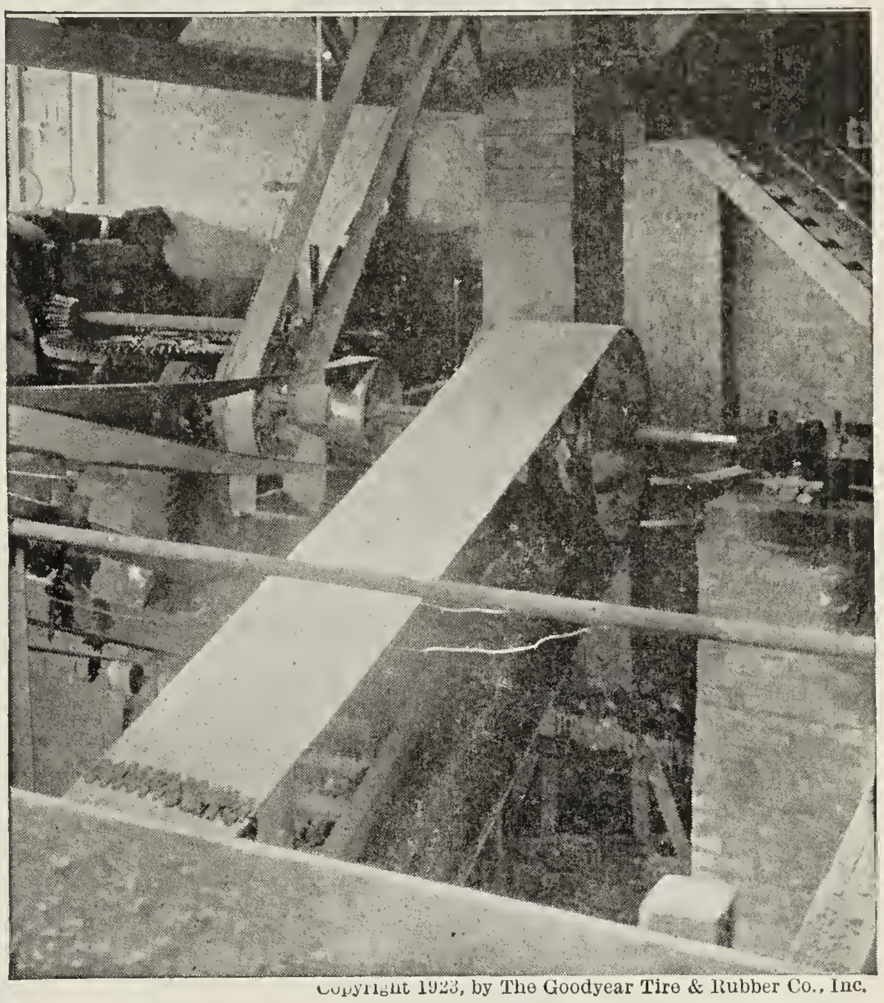
Greater profits for you in better dies

THE
LOUISVILLE MACHINE MANUFACTURING CO.
Louisville, Ohio

If It's Dies You Want—
—We Make 'Em



GOODYEAR MEANS GOOD WEAR



Copyright 1923, by The Goodyear Tire & Rubber Co., Inc.

On all the hard drives for which the brick and clay industry is noted—the main drive, the crushers and grinding pans, pug mills and brick machines, represses and auxiliaries—and in all conveying and elevator duty, Goodyear Belts have an earned reputation for powerful, trouble-free service and long, economical life.

TRANSMISSION
Goodyear, Klingtite, Glide

CONVEYOR
Goodyear, in distinctive types for specific services

HOSE
Air, Water, Steam, Fire and Mill

PACKING
Asbestos and Rubber Sheet

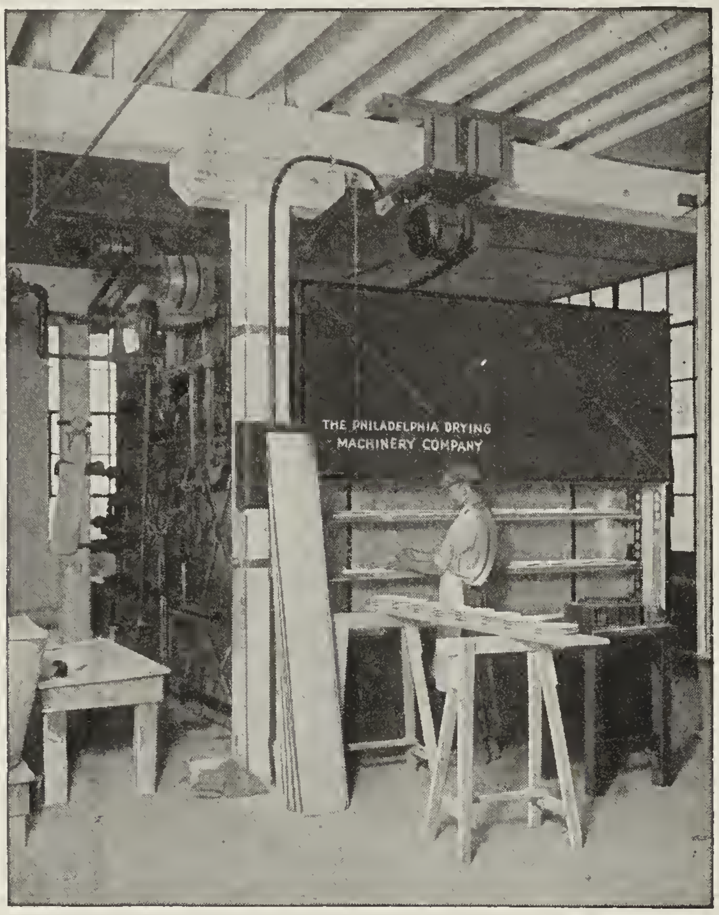
PUMP VALVES

Goodyear Belts and other mechanical goods for the brick and clay industry are scientifically specified to their work under your conditions of service by the G. T. M.—Goodyear Technical Man.

For performance records or any other information about them, write to Goodyear, Akron, Ohio, or Los Angeles, California.

Goodyear Means Good Wear

GOODYEAR
BELTS · HOSE · VALVES · PACKING



Hurricane Dryers

Drying Dipped Dinner Ware at a reduced cost and without marking is a problem "Hurricane" Engineers have solved for many manufacturers.

"Hurricane" Dryers are constructed and equipped to reduce steam, labor, power consumption, and turn out the best finished ware.

Where our standard machines will not meet requirements, we are prepared to submit plans for especially designed apparatus.

Let us tell you how our equipment can be applied to your plant.

See Our Catalog in the Clay Products Cyclopedia

The Philadelphia Drying Machinery Company
3351 Stokley St. Philadelphia, Pa.

Western Agency: 1814 Continental Bank Building, Chicago

there is a holding back spirit in the matter of placing big work, on account of high material and labor prices. However, leaders in the brick industry feel that they are sitting right for a steady run of business over the next six months, and believe by that time a lot of pending work will develop.

ORGANIZE NEW FACE BRICK COMPANY

The Elk River Clay Products Corporation has been incorporated with a capitalization of $300,000 to manufacture clay products. A plant is about to be constructed near Northeast, Md., on the Elk River. It will have a daily capacity of 50,000 brick. Buff and grey face brick will be manufactured and white burning clay will be mined and sold. There is a probability that a tunnel kiln will be constructed on this plant. A. B. Christopher, formerly with the Southern Brick Co., Jonesboro, Ark., is one of the officers of the company. The plant anticipates shipping to Philadelphia and New York markets by water.

OPENS BOSTON SALES OFFICE

The General Refractories Co., has opened its sales offices at 299 Devonshire Street, Room 724, Boston, Mass. Malcolm C. Sargent will be district sales manager in charge of this office.

MERRIMAC ENLARGING PLANT

The Merrimac Clay Products Co., 53 State Street, Boston, Mass., has plans under way for extensions in its plant, to include a new 300-foot tunnel kiln; two circular kilns, each 30 feet in diameter; waste heat dryers, and other structures. The installation is estimated to cost in excess of $200,000. J. R. and H. Raeder are the engineers.

PURITAN RAISES CAPITAL

The Puritan Brick & Tile Co., of Detroit, Mich., has increased its capital stock from $10,000 to $30,000.

DICKEY PUBLISHES A NEW BOOK

The W. S. Dickey Co. of Kansas City, Mo., which is getting out a number of publications, has added another to the list in one entitled, "Vitrified Clay Culvert Pipe and Drain Tile," which is beautifully prepared and illustrated. It deals with the idea that in building good roads, good material is necessary and the books contain a number of illustrations to bear out this point. One of the interesting illustrations shows a section of the Dixie Overland Highway in Georgia. This thorofare is equipped with vitrified pipe ditch relief culverts.

ENGINE ROOM WALL CAVES IN

Work had to be suspended temporarily at the "Josephine" plant of the A. P. Green Fire Brick Co. at Mexico, Mo., when the walls of the engine room caved in. The shutdown resulted from damage to the main drive and power engine. The engine room is next to a passage that separates it from a bin of clay and both buildings were constructed of brick. It is thought the bin was too full of clay and this caused the wall next to the engine room to give way. When it fell it struck the engine room, causing the roof and another side of the room to fall in.

BRICKLAYER SCHOOL HAS 415 PUPILS

The West Side Y. M. C. A. bricklaying school in New York now numbers 415 men in its classes. A survey among the students showed that a great many of them came from other trades and were desirous of becoming bricklayers.

BUYING 10,000,000 DUTCH BRICK

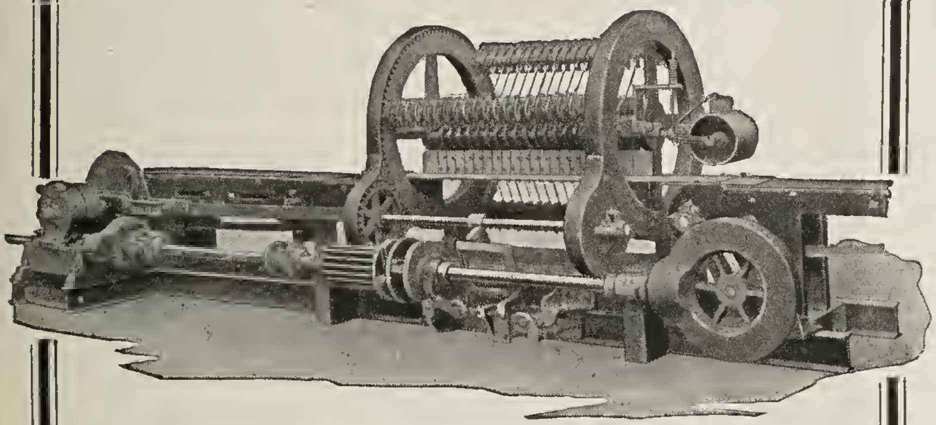
E. W. Dutton, a New York importer, sailed July 5 for Holland to purchase 10,000,000 face and common brick for

If Only for this One Reason

You Should Select a Freese Cutter —

With hundreds of Freese Cutters operating successfully in all parts of the country, working in many kinds of clay, and under greatly differing working conditions, you can feel reasonably certain it will operate successfully in your clay and under your working conditions—

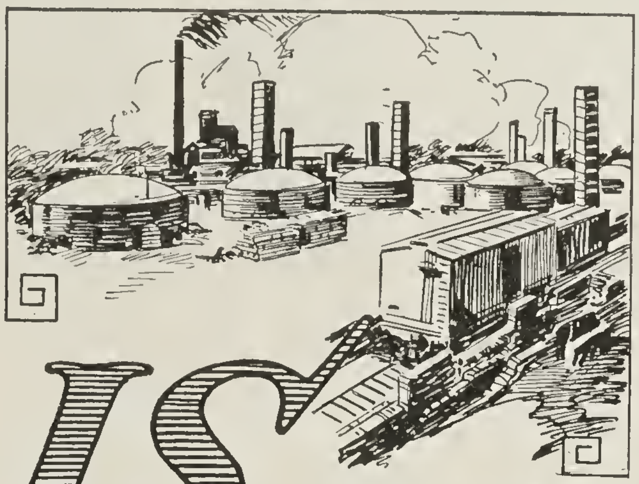
And you can install this cutter expecting **immediate** results, and the same continuous satisfaction it is giving to several hundred fellow-clayworkers.



Freese Rotating Automatic Cutter

E. M. Freese & Company
Galion, Ohio

Dependable Machinery of Proven Efficiency



IS each kiln equally *EFFICIENT?*

Many men still regard the installation of a pyrometer merely as a means of controlling temperature. They overlook many additional advantages pyrometers afford that are equally important.

For instance, pyrometers check the *relative* efficiency of each individual kiln. They "show up" kilns that burn more than their share of coal—making possible savings that quickly justify the pyrometer installation.

With
THWING PYROMETERS
it is possible to equalize the performance and secure that high grade ware that follows uniform burning.

Detailed information and instructive bulletins will be mailed upon request.

Thwing PYROMETERS

THWING INSTRUMENT CO.
3347 Lancaster Ave.
Philadelphia, U. S. A.

134

AN OFFER

TO ANY BRICK OR CLAY PLANT IN THE UNITED STATES

We know that one inherent difficulty in your manufacturing plants is more breakage and more rapid wear of gears than experienced in many other industries.

It is physically impossible for a cast tooth gear to run as truly and as smoothly as a cut gear, and so long as cast gears are used breakage will persist.

It is physically impossible for an untreated steel gear to have the strength, toughness and surface hardness of a heat-treated gear, so as long as untreated gears are used wear will be more rapid—gear life will be relatively short.

Now here is our offer: Let us make you one gear or one pinion, no matter how large or how small, to replace the gear you have the most trouble with now, either from wear or breakage, and we will guarantee our BP gear to last at least four times as long as any cast tooth or untreated gear in the same place.

If it will do that, you don't need any mathematician to figure what your saving will be. You save the cost of three gears and the labor cost of three renewals, and you save three shutdowns. Send us your specifications today and begin this big saving at once.

Let us send you booklets going into details on these subjects.

R.D.NUTTALL COMPANY
PITTSBURGH PENNSYLVANIA

Philadelphia Office: 430 Land Title Bldg.
Chicago Office: 2133 Conway Bldg.

Nuttall

disposal in the New York market. Altho it would be possible for him to sell the brick at a profit, for less than the New York product can be purchased, Mr. Dutton says he will dispose of them at prevailing prices.

CHANGE NAME OF COMPANY

The North Carolina Clay Co., of Haynesville, N. C., has succeeded the Titanic Ore Co., and the capital stock has been increased from $75,000 to $250,000.

INCORPORATE YADKIN CERAMIC CO.

The Yadkin Ceramic Co., with a capital of $50,000, has been incorporated at New London, N. C., and will manufacture brick. The incorporators are G. W. Isenhour, and Rufus Isenhour and W. H. Meigs.

MASSILLON DOUBLING CAPACITY

Business of the Massillon (Ohio) Refractories Co. is exceedingly good and the company is increasing its capacity approximately 100 per cent. This capacity increase is being effected by building another kiln 40x110 feet, an addition to the molding and drying rooms and a new siding approximately 1,000 feet long for unloading raw materials. The company manufactures a very high grade of refractory product.

FORM COMPANY IN MASSILLON

The Massillon (Ohio) Clay Products Co. has been incorporated in Columbus, Ohio, for $125,000. Walter T. Smith and Edward M. Ertle were named as incorporators of the new company.

Mr. Ertle stated that the company was being organized for the purpose of building a brick plant on a 40 acre tract a short distance from Massillon. The company has not yet been organized and no officers have been named. Mr. Ertle said the site in question contained large deposits of shale, clay, limestone, and that it was planned to erect two kilns for burning brick and to increase the number to six as soon as sufficient finances can be obtained.

PLANNING TO MAKE IMPROVEMENTS

The L. J. Bour Refractories Co., Scranton, Pa., is making extensions and improvements in its plant for increased capacity and will soon begin the installation of additional equipment to cost about $12,000.

BUILDING 50,000 CAPACITY PLANT

Construction of a plant which is to be modern in every way and will manufacture brick in DuBois, Pa., is under way. The plant, it is anticipated, will be ready for operation about September 1. The new company will be known as the Mahoning Valley Brick Co. and holds title to 47 acres of fire clay land which is reported to be equal to some of the finest deposits in the United States. The vein is 13 feet thick and the concern plans to ship much of the clay to other localities. Several large contracts have already been booked. The officers of the company are: H. J. Gerber, president, of Brookville; T. S. Williams, secretary; and Ben M. Williams, treasurer. It is expected that 12 kilns will be built, having a capacity of 50,000 brick daily and giving employment to 50 men.

REFRACTORIES MERGER COMPLETED

The Stowe-Fuller Co., the National Fire Brick Co. and the Minor Fire Brick Co., which have for many years been engaged in manufacturing and selling fire brick and refractory materials, have lately been consolidated into a single company under the name of the Stowe-Fuller Refractories Co., which began operations as of July 2, 1923, and will conduct the business heretofore carried on by the above-named companies.

The Stowe-Fuller Refractories Co. has also acquired a controlling interest in the Federal Refractories Co., manufacturer of silica, magnesite and chrome brick, and will handle the output of the Open Hearth Fire Brick Co., the Zoar Fire Clay Co., the Lock Haven Fire Brick Co., and the Hite Coal & Clay Co.

The management of the company will continue in the hands of the same officers who have heretofore operated the various properties. Charles B. Stowe is the chairman of the board of directors of the new company, Charles E. Kapitzky is the president, Thomas Kemp the first vice-president and operating manager, Joel H. Fuller the second vice-president, and Charles J. Steitz is the secretary.

NEW COMPANY TAKES OVER INTERNATIONAL

Organization of the Clermont Clay Products Co., 1420 Chestnut St., Philadelphia, has been announced. This concern has been organized for the purpose of taking over the plant and property of the International Clay Products Co., located at Clermont, Pa. The International Company manufactured underground clay conduits.

MAY BUILD PLANT

W. H. Lyon, 316 Security National Bank Bldg., Sioux Falls, S. D., contemplates erection of a brick and clay products plant at that point, it is reported.

CHEROKEE PLANT STARTS

What is said to be one of the finest and best equipped brick plants in the southern field was opened in mid July when the Cherokee Brick Co., 508 Mitchell St., Knoxville, Tenn., started operations at the new plant that has been under construction there for some months. Incorporation of this company was announced some time ago. Initial capacity of the plant is 50,000 brick daily, but the units are so arranged that this capacity can be considerably increased by the addition of equipment. The plant as a whole represents an investment of approximately $175,000. The company is composed principally of a group of Knoxville business men, with Roy M. Newman as president.

SALT LAKE TEACHING BRICKLAYERS

Due to the initiative of the Utah Builders Exchange, the new high school in Salt Lake City will have a class in bricklaying and plastering. C. C. Cahoon of the Salt Lake Pressed Brick Co. is on the executive committee which is supervising the instruction.

UNION GROVE MAKE 600,000 TILE YEARLY

The Union Grove Tile & Brick Works in the southern part of Union Grove, ranks among the large tile making establishments in Wisconsin. The plant consists of three buildings, one four-story, one three-story, and a one-story structure. Machinery is operated by a steam engine, the power being furnished by a large boiler. Three large brick kilns are near the buildings in which the tile is burned. Clay is dug from a pit a short distance from the factory and hauled to the machine by means of steel cars on a small track. The cars are operated by means of a donkey engine and cable.

At present the output of the factory is about 600,000 pieces of tile yearly and about 300,000 brick. The yearly consumption of fuel is about 3,000 tons of soft coal. The company employs 10 or 12 men during the making season.

NEW COMPANY IN WISCONSIN

Articles of incorporation have been filed by the Black Creek (Wis.) Tile Co. The corporation has $7,000 capital stock, and the incorporators are George J. Richl, W. E. Moody and F. A. Brandt.

Black 4th Vein Betty

TRADE MARK REGISTERED UNITED STATES PATENT OFFICE

"Firemen's Delight"

Take This Tip

A careful survey of the coal situation shows that, with the exception of railroads, practically no storing is being done. Consumers are buying as their needs materialize. This indicates to us that a great demand for coal is not far distant, which means—

Shipments will be uncertain, due to the fact that car shortages prevail in some territories even now.

Coal will no longer be purchased at sacrifice prices, which now obtain.

"Black Betty Quality"
"Zimmerman Service"

"Zimmerman Service" puts our policy in a nut shell. "If you favor us with your business during the dull summer months, the fact is not forgotten in the strenuous winter months when you need coal."

Mines Located on the C. & E. I.
Railroad at Clinton, Indiana

Zimmerman Coal Company

609 Tribune Building

Long Distance Wabash 9921

Terre Haute, Indiana

Trade Names Now in Use
on Face Brick and Other Clay Products

The purpose of this directory is two-fold: it serves to prevent a manufacturer from adopting a trade-name that is already in use—and it also helps manufacturers who use it to establish priority of claim to a name.

ALLIANCE RUFFS—Alliance (O.) Brick Co.
ALUMINITE—The Lock Haven Fire Brick Company, Lock Haven, Pa.
ALUMINITE—The Stowe-Fuller Co., Cleveland, Ohio.
ALUMITE—The Massillon (Ohio) Refractories Co.
ANNESS HOLLOW TILE—Anness & Potter Fire Clay Co., Woodbridge, N. J.
APEX—Tri-City Brick Company, Rock Island, Ill.
ARCADIAN—Poston Paving Brick Company, Crawfordsville, Ind.
ARKATEX—Southern Building Products Co., Little Rock, Ark.
ARMOR—Greenpoint Fire Brick Co., Brooklyn, N. Y.
ARMURE—Tri-City Brick Company, Rock Island, Ill.
ART-TEX—W. E. Loomis, Sherbrooke, P. Q.
ARTBRIQUE—Yingling-Martin Brick Co., Johnsonburg, Pa.
ATHENA—Hocking Valley Fire Clay Co., Nelsonville, Ohio.
AUTO BRIK—Lancaster Iron Works, Inc., Lancaster, Pa.
BABYLONIAN—The Standard Brick Company, Crawfordsville, Ind.
BEAVERCLAY—Beaver Clay Mfg. Co., New Galilee, Pa.
BISHOP COLONIAL—Southern Brick and Tile Company, Louisville, Ky.
BRADFORD HOLLOW BUILDING TILE—Bradford Brick & Tile Co., Bradford, Pa.
BRADFORD REDS—Bradford Brick & Tile Co., Bradford, Pa.
BRADFORD RUFFS—Bradford Brick & Tile Co., Bradford, Pa.
BUFFTEX—Sheffield (Ia.) Brick & Tile Co.
BURLAP—Key-James Brick Co., P. O. Alton Park, Tenn.
BURMAH—Walkers Mill Stone and Brick Co., Pittsburgh, Pa.
CALEDONIAN—Fiske & Co., Inc., Boston and New York.
CHENILLE-TEX—Martinsville Brick Co., Martinsville, Ind.
CASTLE-TEX—New Castle Mining and Clay Products Co., New Castle, Pa.
CLAYCRAFT ROUGH BUFFS AND GRAYS—The Claycraft Mining and Brick Co., Columbus, Ohio.
CLAYCRAFT SMOOTH BUFFS AND GRAYS—The Claycraft Mining and Brick Co., Columbus, Ohio.
CLAYCRAFT VELOURS—The Claycraft Mining and Brick Co., Columbus, Ohio.
CLAYTEX ROUGH REDS AND BUFFS—Walton N. Cable, New York City.
CLOISTER—Western Brick Co., Danville, Ill.
COLONIAL—Capital Clay Co., Des Moines, Iowo.
CONCO CLAY PRODUCTS—H. D. Conkey & Co., Mendota, Ill.
CORALTONE—Harris Brick Co., Zanesville, O.
CORALROSE—Harris Brick Co., Zanesville, O.
COLUMBIA—Columbia Clay Co., Columbia, S. C.
COMMUNITIES—Danville Brick Co., Manufacturers—H. D. Conkey & Co., Mendota, Ill., General Sales Agents.
CORDOVA (Roofing Tile)—Gladding, McBean & Co., San Francisco and Lincoln, Cal.
CORSWEVE—Thomas Moulding Brick Co., Chicago, Ill.
CROTON-REDS—New Castle Mining and Clay Products Co., New Castle, Pa.
CROWN—Green Fire Brick Co., A. P., Mexico, Mo.
DENISON—Mason City (Ia.) Brick & Tile Co.
DE LUXE—The Standard Brick Company, Crawfordsville, Ind.
DIAMOND—Missouri Fire Brick Co., St. Louis, Mo.
DORIC—Western Brick Co., Danville, Ill.
DUNBAR—United Refractories Co., Uniontown, Pa.
EGYPTIAN PAVING BLOCK—Murphysboro (Ill.) Paving Brick Co.
E. F. B. Co.—Elk Fire Brick Co., St. Marys, Pa.
ELKCO—Elk Fire Brick Co., St. Marys, Pa.
ELKCO SPECIAL—Elk Fire Brick Co., St. Marys, Pa.
ELK STEEL—Elk Fire Brick Co., St. Marys, Pa.
EMBOSTEX—Streator (Ill.) Brick Co.
EMPIRE—Green Fire Brick Co., A. P., Mexico, Mo.
EMPIRE—The Minor Fire Brick Company, Empire, Ohio.
EMPIRE—Western Brick Co., Danville, Ill.
EVERHARD ANTIQUE—Everhard Co., Massillon, O.
EVERHARD CORINTHIANS—Everhard Co., Massillon, Ohio.
EVERHARD DOUBLE-TEXTURE—Everhard Co., Massillon, Ohio.
EVERHARD FERN-LEAF—Everhard Co., Massillon, Ohio.
EVERLASTING—Mason City (Ia.) Brick & Tile Co.
FALLSTON IRON SPOTS—Fallston Fire Clay Co., Pittsburgh, Pa.
FALLTEX Fallston Fire Clay Co., Pittsburgh, Pa.
FISKLOCK—Fiske & Co., Inc., Boston and New York.
FLINTTILE—Coates Mfg. Co., Kansas City, Mo.
FRASERCLAY—Fraser Brick Co., Dallas Texas.
F. R. C. CHROME—Federal Refractories Company, Alexandria, Pa.
F. R. C. MAGNESITE—Federal Refractories Company, Alexandria, Pa.
F. R. C. SILICA—Federal Refractories Company, Alexandria, Pa.
FROSTBURG RED COMMON BUILDERS—Savage Mountain Fire Brick Co., Frostburg, Md.
FROSTBURG ROUGH TEXTURE — Savage Mountain Fire Brick Co., Frostburg, Md.
FROSTBURG RED HOLLOW TILE—Savage Mountain Fire Brick Co., Frostburg, Md.
FUL-TONE—Fultonham-Texture Brick Co., East Fultonham, Ohio.
FULTONHAM-BLEND — Fultonham-Texture Brick Co., East Fultonham, Ohio.
GLASGO—Glasgow Clay Products Co., Glasgow, Va.
GLONINGER IRON SPOTS—Gloninger & Co., Pittsburgh, Pa.
GOLDEN GLOW—Thos. Moulding Brick Co., Chicago, Ill.
GOTHIC—Western Brick Co., Danville, Ill.
GREENDALES—Hocking Valley Pro. Co., Columbus, O.
GREENDALE RED RUGS—Hocking Valley Pro. Co., Columbus, O.
GREENDALE RUGS—Hocking Valley Pro. Co., Columbus, O.
GRID—Fiske & Co., Inc., Boston and New York.
HAWK-I-TEX—Capital Clay Co., Des Moines, Iowa.
HEATHER-TEX—New Castle Mining and Clay Products Co., New Castle, Pa.
HOCKING BLOCK—Hocking Valley Brick Co., Columbus, O.
HOLLAND SPLIT—Thomas Moulding Brick Co., Chicago, Ill.
HOMESPUN—Thomas Moulding Brick Co., Chicago. Ill.
HY-TEX—Hydraulic-Press Brick Co., St. Louis, Mo.
INTERLOCKING TILE—Fraser Brick Co., Dallas, Texas.
IRONCLAY—Iron Clay Brick Co., Columbus, Ohio.
IRONSTONE—Salt Lake Pressed Brick Co., Salt Lake City, Utah.
KELSO—Hayes Run Fire Brick Co., Orviston, Pa.
KEYSTONE—Elk Fire Brick Co., St. Marys, Pa.
LADLE—The Zoar Fire Clay Company, Zoar. O.
LAKE SHORE MINGLED SHADES—The Burton-Townsend Co., Zanesville, O.
LAKE SHORE BLOCK—The Burton-Townsend Co., Zanesville, Ohio.
L. H. STEEL—The Lock Haven Fire Brick Company, Lock Haven, Pa.
LO-TEX BRICK—The Longmont (Colo.) Brick & Tile Co.
LO-TEX TILE—The Longmont (Colo.) Brick & Tile Co.
LOZENGE—Tri-City Brick Company, Rock Island, Ill.
MARCEL—Tri-City Brick Company, Rock Island, Ill.
M. D. ELK—ElkFire Brick Co.,St. Marys, Pa.
MEDAL BLOCK—Medal Paving Brick Co., Cleveland, Ohio.
METALEX—Columbia Clay Co., Columbia, S. C.
MEXICO, MO.—Green Fire Brick Co., A. P. Mexico. Mo.
MIDCO—Mid-Continent Clay Co., Peru, Kansas.
MINOR—The Minor Fire Brick Company, Empire, Ohio.
MITCHELL EXTRA—Mitchell Clay Mfg. Co., St. Louis, Mo.
MITCHELL SUPERIOR—Mitchell Clay Mfg. Co., St. Louis, Mo.
MITCHELL NO. 1—Mitchell Clay Mfg. Co., St. Louis, Mo.
MITCHELL DIASPORE—Mitchell Clay Mfg. Co., St. Louis, Mo.
MOBRIQUE—Harris Brick Co., Zanesville, O.
MOSAIC—Western Brick Co., Danville, Ill.
NATIONAL—The National Fire Brick Company, Strasburg, Ohio.
NO. 1.—J. H. Gautier & Co., Jersey City, N. J.
NONPAREIL—Armstrong Cork & Insulation Co. Pittsburgh, Pa.
NORTRUF—Tri-City Brick Company, Rock Island, Ill.
NUMATZ—Tri-City Brick Company, Rock Island, Ill.
NUVOGUE—Boone (Ia.) Brick, Tile & Pav. Co.
OIL—J. H. Gautier & Co., Jersey City, N. J.
OLD HOMESTEAD—Burton-Townsend Co., Zanesville, Ohio.
OLD ROSE MISSION—The Briggs Company, Lansing. Mich.
OLEAN BLOCK—Sterling Brick Co.,Olean N.Y.
ORIENTAL—Poston Paving Brick Co., Crawfordsville, Ind.
OXFORD—Southern Brick and Tile Company, Louisville, Ky.
PASTELS—The Standard Brick Co. Crawfordsville, Indiana.
PATRICIANS—Danville Brick Co., Manufacturers—H. D. Conkey & Co., Mendota, Ill., General Sales Agents.
PENN.—The Lock Haven Fire Brick Company, Lock Haven, Pa.
PERFEKT—Tri-City Brick Company, Rock Island, Ill.
PERSIAN SPLIT—Thomas Moulding Brick Co., Chicago, Ill.
POS-TEX—Poston Brick Co., Springfield, Ill.
POTOMAC-SAVAGE—Savage Mountain Fire Brick Co., Frostburg, Md.
"POTTRY"—B. Mifflin Hood Brick Co., Atlanta, Ga.
PROMENADE—Yingling-Martin Brick Co, Johnsonburg, Pa.
RAGTEX—Alphons Custodis Chimney Construction Co., New York City.
RAINBOW—Burton Townsend Co., The, Zanesville, Ohio.
RED ROCK RUFFS—Auburn Shale Brick Co., Auburn, Pa.
ROCKTEX—Rockford (Iowa) Brick and Tile Co.
ROTEX—Elk Fire Brick Co., St. Marys, Pa.
Gettysburg, Pa.
ROYAL HA-SIERS—Decatur Brick Mfg. Co., Decatur, Ill.
RUBYTEX—Columbia Clay Co., Columbia, S.C.
RUFTEX—Thomas Moulding Brick Co., Chicago.
RUG—Hocking Valley Pro. Co., Columbus, O.
RUSTIC—Mid-Continent Clay Co., Peru, Kansas.
RUSTIQUE ORIENTAL—Martinsville (Ind.) Bk. Co.
ST. MARYS—Elk Fire Brick Co.. St. Marys.Pa.
SAVAGE MOUNTAIN—Savage Mountain Fire Brick Co., Frostburg, Md.
SHALE-TEX—Streator (Ill.) Brick Co.
SILLIMANITE — The Massillon (Ohio) Refractories Co.
SIL-O-CEL—Celite Products Co., Chicago, Ill.
S. M.—Savage Mountain Fire Brick Co., Frostburg, Md.
S. M. A.—Savage Mountain Fire Brick Co., Frostburg, Md.
M. EXTRA—Savage Mountain Fire Brick Co., Frostburg, Md.
SPECIAL—Green Fire Brick Co., A. P., Mexico, Mo.
STANDARD—Green Fire Brick Co., A. P., Mexico, Mo.
STANDARD—The National Fire Brick Company, Strasburg, Ohio.
STEEL CLAY—Thos. Moulding Brick Co., Chicago Ill.
TAPESTRY—Fiske & Co., Inc., Boston and New York.
TAVERN BRICK—Metropolitan Pav. Brick Co., Canton, O.
TEXTUR—Thomas Moulding Brick Co., Chicago, Ill.
THERMO—The Crush Brick Co., Sulphur Springs Texas.
TIFFANY—Thomas Moulding Brick Co., Chicago, Ill.
TINTARA—McKay Brick Co., Wickliffe, Ohio.
TORONTO—Toronto Fire Clay Co., Toronto. O.
TORONTO VINE RUFFS—The Toronto (Ohio) Fire Clay Co.
TOWNSEND BLOCK—The Burton-Townsend Co., Zanesville, Ohio.
TURKESTAN—Beaver Clay Mfg. Co., New Galilee, Pa.
TURKO—Rochester (Pa.) Clay Products Co.
TUT-TEX—MATTS — Birmingham (Ala.) Clay Products Co.
TUXEDOS—Danville Brick Co., Manufacturers—H. D. Conkey & Co., Mendota, Ill. General Sales Agents.
UNITED—United Refractories Co., Uniontown Pa.
U. R. Co.—United Refractories Co., Uniontown, Pa.
U-TEX—Fultonham-Texture Brick Co., East Fultonham, Ohio.
VINETEX—The Toronto (Ohio) Fire Clay Co.
VERTEX—Beaver Clay Mfg. Co., New Galilee Pa.
VOLCANIC—Beaver Clay Mfg. Co., New Galilee, Pa.
WATERPROOF—Gloninger & Co., Pittsburgh, Pa.
WIRE-CUT-LUG BRICK—Dunn Wire-Cut Lug Brick Co., Conneaut. Ohio.
YALE-TEX—Gloninger & Co., Pittsburgh, Pa.
ZOAR—The Zoar Fire Clay Company, Zoar, Ohio.

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

Put Up a Sign

A MEMBER of the editorial staff of Brick and Clay Record recently passed thru two sections in the state of Ohio where sewer pipe plants abound in great numbers. As he passed thru one of the above districts he was travelling on train. In the other case he saw the plants from automobile.

It was but natural for this representative of Brick and Clay Record to attempt to learn whom the plants belonged to. However, in but very few cases was there a sign or advertisement which would help distinguish the establishment. Other passengers on the same train which by the way was not on a main line track, were also interested in the plants.

This brings to mind that clay plants in all branches of the industry are lax in providing a sign or some form of identification and advertisement for the benefit of the passers by. Not only as a matter of good business but for the sake of pride, every clay plant worthy of the name should advertise itself at its plant site. Most of America's largest companies do this.

The following actual instance may be of interest in this connection. A certain plant located along the main line of one of our prominent railroads aroused the curiosity of passengers to the extent that many of them asked the conductor the name of the plant. The conductors were interrogated so frequently that it became a nuisance. The railroad company was finally moved to ask the concern whose plant aroused such great interest to erect a large sign at its factory so that the curiosity of those passing by would be satisfied.

* * *

Where Money Is Lost

MANY a clay plant manager whose plant was modern and well equipped a few years ago has something in common with the manufacturer we ran up against recently. This owner told us that his plant was a money maker a few years back, but that it recently has been running in the red. His clay is the same and the quality of his product equal to that formerly manufactured, he said. Selling prices were proportional to cost of supplies and labor wages.

In his analysis this manufacturer did not go far enough. While making the rounds of inspection we noticed that his kilns were in poor shape and so we asked him to check up on burning time and fuel consumption. Lo and behold! What do you think he found? His burning time had increased considerably and so had his fuel consumption. This increase came very gradually, however, and hence had never been realized!

The capacity of the plant had been increased from time to time, and a few more kilns added but the kiln turnover was slower. Moreover, in increasing the production proper changes in machinery were overlooked and the power consumption on the old machinery was greater than it would have been had new and larger equipment been purchased. Repairs were heavy it was found.

In an effort to save money in purchasing new machinery, this manufacturer was more than making it up by spending more for power, repairs and time lost due to shutdowns.

A description of the experience of one superintendent along these lines is told in the article by E. E. Ayars, "Maintenance and Rebuilding of Round Down-Draft Kilns," which appears in this issue. This article brought to mind the experience of the manufacturer referred to above.

The plight of the manufacturer discussed above and the experience of the clay plant superintendent which is told in this issue should admonish every manufacturer to keep on top of his job. Check up the production of your equipment, dryer and kilns like you would your men.

* * *

President's Death and Business

THE UNTIMELY death of our late president, Warren G. Harding, is indeed very unfortunate. Coming at a time when economic conditions in the country are slightly unsettled, many are likely to feel that a set-back in business conditions may result. To those who may feel this way let us just remind them that "state of mind," psychology, or whatever you want to call it, is an important factor in deciding what course affairs of the nation will take.

If everyone practiced the conservatism and had the faith in the nation's potential stability that Harding had, there would need be no fear of any adverse situation cropping out. Let's all go to work and have confidence in the ability of our country to overcome any obstacles to good business.

* * *

Drain Tile Men, Let's Go

IF THERE IS any branch of the clay manufacturing business that has never delved down into the possibilities of its market, it is that division composed of the drain-tile manufacturers. Sitting in an easy chair after lunch, some of the more progressive tile producers have, no doubt, often dreamed of an Elysium where all farmers were following an intensive system of drainage, making the future of the drain tile manufacturer one long, sweet song.

Have you ever had this experience? —to be rudely awakened by a telephone message from the plant, stating that So-and-so was in again and that he would absolutely refuse to place his order for tile unless you came down a notch or two with your prices? Cruel, no doubt, but true.

Much has been said in the past regarding what could be done for the drain tile business if it were only in the condition to do something. Several years of lean profits ought to bring the manufacturer to the point where he now ought to be willing to try out a national association if he has any sporting blood in him at all.

It is an association with sufficient funds to go out and do things that is needed. An association that will tell Mr. Farmer that if instead of buying an automobile he will put that money in tiling, he will find it possible to increase his production on a smaller area and with less labor and next year be able to buy a larger and more comfortable car.

As a matter of fact there are right now a great many drain tile manufacturers who would welcome an association. Really, all that is needed is someone to bring them together. Every drain tile producer ought to hop in any band wagon that is headed toward an association.

A Word to Our Manufacturer Friends

By Edward K. Cormack, Business Counselor for the National Builders' Supply Association

Editor's Note.—This article appeared as an editorial in a recent issue of Building Supply News, a national publication read by dealers in building materials. The author, Edward K. Cormack, was for a long time president of a large retail building material concern in Chicago. He has been president of the National Builders' Supply Association and recently severed his connections with the building supply concern to act as business counsellor for the National Builders' Supply Association. These qualifications make the remarks of Mr. Cormack of considerable interest, especially since he refers to manufacturers in his text. For this reason we reprint the editorial herewith.

I HOPE EVERY MANUFACTURER will read this article.

I always knew or thought I did, which amounts to the same thing, that the manufacturers' and dealers' problems were connected—a sort of Siamese Twins—separate and distinct personalities but incapable of traveling in opposite directions. But never has this conviction been as strong as it is today, after six months exclusively devoted to a study of the "whys and wherefores."

At times I have been accused by my friends of being too altruistic, of expecting men to be other than wolves walking upright, and of preaching co-operative peace when there could be nothing but war, so for this once in my appeal to the manufacturer to get behind the movement for Dealer organization, in fact to insist upon it, I am going to be as mercenary and cold-bloodedly selfish as it is possible for an individual to be who is looking for nothing but the piling up of profit.

Cold Facts Regarding "Direct Selling" by Manufacturer

Whatever may be the manufacturer's personal wishes and desire to market his product direct to the consumer, if his output be large and widely distributed, he knows the gratification of that desire is impossible for economic reasons, if for no other.

This being the case, making if you want to, the best of a bad job, it is up to the manufacturer to encourage and foster his market so it will pay as high a price as possible for goods produced by the factory.

This can be done by the dealer's being in a position to constructively purchase instead of being compelled to destructively shop.

In the disorganized territory, where the dealers are more interested in beating the other fellow to it, instead of building up a sound merchandising sales policy, what does the manufacturer have to listen to? Isn't the story always something like this, "You will have to give me a concession on this lot. The XYZ Co., is giving Jones a special rate and if you expect me to sell your goods, you must enable me to meet competition."

And what, Mr. Manufacturer, do you do? Well, after prayer (or is it cussing) out of considerations of friendliness and policy, you give in and the dealer gets his competitive price which enables his friend (?) across the street to go to his manufacturer, the ABC company, and demand a still further reduction so his neighbor may be legally wiped off the map. Oh, it's a great game and as a result of it, the ABC company, and the XYZ company are soon scrapping all over the lot and a large volume of profitable business has been turned into a stench and a byword, and all on account of the manufacturers' not insisting that their products should be retailed thru organized channels.

Where Both Manufacturer and Dealer Benefit

The Mennen company fought thru the courts the attempt to make of their product a football, and the Supreme Court of the United States gave them a pat on the back and said that they were right and justified in their refusal.

In localities where the dealers are not trying to put each other out of business, the manufacturers may be asked for concessions from their price list. Some men are never satisfied, but they know they do not have to give in for the sake of meeting unfair and ruinous competition.

The territory in which the dealers are organized is the territory that is profitable to the manufacturer and any manufacturer who by word or deed does or permits anything to be done which will weaken or destroy such an organized group, is in the same class as the maniac who sets fire to his own home.

As a good sales policy, just as necessary as advertising, it might be expedient for the manufacturers, as a group, to spend a little time and money in organizing their customers, the dealers. It would only take a portion of the money at present spent by these same manufacturers in junkets and the results would be a lot more profitable.

I know, having been on some of these parties, that they are more a sop to the manufacturers' self-esteem than business getters.

What Dealer Organization Means to Manufacturer

The organizing of the dealers is not only the retailers' salvation, but it is also the manufacturers'.

Let the whole retail group revert at the same time to unfair competition and the manufacturer will be left holding the bag, first in diminished profit; second, in uncollectible debts; third, in having to market more and more of his entire product direct.

The district, state and national associations of building supply dealers are as much the manufacturers' business as are his own sales, credit and executive departments.

* * *

WHY MACHINES WILL SUPPLANT MEN

To strike on the job instead of to strike off the job seems now to be the settled policy of the I. W. W. lumber industry workers, says the National Lumber Manufacturers Association. The word has gone out from Chicago to all I. W. W. lumber workers to hold their jobs as far as possible and at the same time thru passive sabotage, make lumber production so unprofitable as to result in its termination. A recent number of the Lumber Workers' Bulletin, an I. W. W. sheet published in Chicago, instructs its followers in these words:

"The employing class lives on our labor. It has to pay us wages, which are a part of what we produce, and everything else we make for it is its profit on which it exists. When we cut down the profits—we starve capitalism. That is the only way it can be hurt. When we strike off the job, we stop the profits, but we stop the expenses, too. Now we must all be on the job, drawing wages, but making no profit for the boss.

"It is not necessary to break any laws to do this. Figure out just how little work you can do and get by. Do that, and no more. Let every I. W. W. member point out to the unorganized that there is plenty of chance to get another job if one is fired. Let no faller slaughter the virgin forest too recklessly. Let no bucker slash into the logs too hurriedly. Remember that this is dangerous work, and every precaution should be taken to preserve human lives. Go slow. Rigging men, choker setters, loaders, donkey firers, remember that too rapid labor under the hot summer sun induces sunstroke. Don't do it. Don't get out too many logs. Remember that when you have worked two hours you have produced enough value to support yourself. Everything you do after that time is the boss's—is a present to your enemy—and the enemy of your class! Take it easy. The boss will use all the profit you give him to oppress you, to build prisons for you, to hire gunmen to shoot you as Fellow Worker McKay was shot in Aberdeen. Don't put these guns into the hands of your enemies. Go slow.

"Everybody on the job—and everybody loaf. Organize all the time. Spread literature, talk to the uneducated, and hinder profits continually. These are our tactics from now on until the next strike off the job."

* * *

Wage Earners Better Off Than in 1920 "Prosperity Period"

CONTRARY to general belief, the American wage earner in 1923 is better off than during the so-called "peak period" of three years ago. He is, in fact, in a more prosperous condition than for a long time. His earnings have risen in the past year so much more than his living expenses that 1920 no longer needs to be considered as the most recent high-water mark for the worker in industry.

These conclusions have just been announced as the result of researches into wages and the cost of living by the National Industrial Conference Board. As the result of a study of conditions in plants employing more than 600,000 workers, the Board finds that the "weighted" or comparative excess of rising wages over rising living costs was between 17 and 18 per cent. greater in May, 1923, than in June, 1920, with the figures of the last pre-war month—July, 1914—as a basis.

The Board, which performs the research work of American industry in the field of industrial economics, points out in an announcement just issued how some misconceptions of the wage situation may have occurred.

Determine "Real" Earnings

"For the last few months," says a statement from the Board, "wages have been rising. Many plants have announced increases of 10 per cent., 15 per cent. and even more. How much of this is net gain to the wage earner and how much merely compensates him for increased living costs are important questions for consideration. In order to measure the effect of fluctuations of the cost of living upon earnings, a figure known as 'real' earnings is developed by dividing the index number of hourly or weekly earnings by the index number of the cost of living.

"Thus by discounting the effect of fluctuations in the cost of living, the purchasing value of money earnings for different periods may be determined. The most recent compilation of data by the National Industrial Conference Board from its study of wages, comprising returns from plants employing more than 600,000 wage earners, brings out some interesting facts regarding 'real earnings.'

Facts About Earnings

"It is generally believed that at the peak of high wages in 1920 the wage earner was in a more advantageous position than he had occupied for a long time and more advantageous than he has occupied since that time. It is true that wages were at their highest levels in 1920, but the cost of living was also at that time high. With the July, 1914, figures taken as 100, the index number of hourly earnings in June, 1920, was 248, and of weekly earnings 240, while the cost of living index was 203. The index number of 'real' hourly earnings was consequently 122 and that of 'real' weekly earnings 118. From that point the cost of living declined more rapidly than earnings with the result that there was an advance in 'real' weekly earnings until March, 1921, 'real' hourly earnings stood at 133 and 'real' weekly earnings were at 120 in September and October, 1920, their high points before the present.

"Beginning with the middle of 1922, earnings again began to rise, first as a result of longer hours worked and later because of increase in wage rates. As a result the index number of hourly earnings in May, 1923, was 223 and of weekly earnings 218. For the same month the cost of living index number was 160.3. Thus wages were fast approaching the peak levels while the cost of living was considerably below the peak and in consequence 'real' earnings rose well above the former peak figures. In May, 1923, the index number of 'real' hourly earnings was 139 and that of 'real' weekly earnings 136, indicating that in the purchasing value of his earnings the wage earner was better off in May, 1923, than during the peak months of 1920."

* * *

RESERVE A PLACE IN THE MUSEUM!

Frank Hoffman is known in the vicinity of Florence, Kans., to have extraordinary speed in laying brick. It is declared that he can set 236,500 pounds of brick, or 131 tons, in a day's work. He is at the present time demonstrating his skill on a local avenue for the Kaw Paving Co. It is said that he keeps from eight to ten men busy supplying him with brick from the sidewalk. His speed is that of an automatic brick machine, picking up the brick one in each hand and dropping them into place evenly aligned.

* * *

SURPLUS CARS REACH A TOTAL OF 84,210

The railroads of the United States on July 14 had 84,210 surplus freight cars in good repair and immediately available for service, in spite of the fact that within the week a total of 1,019,667 freight cars were loaded with revenue freight, the second largest number for any week in the history of the country. The record loading was in the week ending June 30, when the total of 1,021,770 cars were loaded, at which time there were 63,636 surplus cars. When the previous loading record was made during the week of October 14, 1920, at which time 1,018,539 freight cars were loaded, there were only 2,188 surplus freight cars, while there was a shortage of 69,517 freight cars.

The total number of surplus freight cars on July 14 was an increase of 20 143 over the number on July 8. Surplus box cars in good repair numbered 64,692, or an increase within a week of 21,771, while surplus coal cars numbered 4,865, or an increase of 245 within the same period. Surplus refrigerator cars totaled 8,074, an increase of 70 over the total number on July 8, but there was a decrease of 1,949 in the number of surplus stock cars which brought the total on July 14 to 5,702.

The reported shortage in freight cars on July 14 totaled only 5,574. This was an actual decrease since July 7 of 1,314 cars, despite the record loading of revenue freight. Shortage in box cars on July 14 was only 1,047, a decrease of 214 within a week, while the shortage in coal cars was 2,700, a decrease of 1,167 within the same period.—*Railroad Data.*

* * *

RAILROADS JUST HOLDING THEIR OWN

As of July 22 there were 79,710 surplus freight cars in good repair scattered thruout the country, awaiting the call of shippers. A report issued by the American Railway Association shows that this was a decrease of 4,500 cars from the total on July 14. At the same time the car shortage amounted to 7,891, an increase of 2,317 over the previous week. This decrease in surplus cars and the increase in car shortage is taken to mean that the railroads are just about holding their own at the present time in the matter of freight movement.

* * *

COMMODITY PRICES DECREASE

Commodity prices exhibited decrease of approximately 1 per cent. during the month of July, according to Dun's index number, but they are still 7.6 per cent. higher than at this time last year, and as compared with August 1, 1921, the index number now shows a gain of 14.1 per cent. The high point for the movement this year was reached in April, and between the number at the end of that month and the present one there is reflected a recession of 3.4 per cent., the sharpest decline in all of the units which are weighed in making up this index number being in breadstuffs.

* * *

PIG IRON PRICE RISE GOOD OMEN

When the price of pig iron was marked up on August 2 after having steadily declined for several months, it was hailed as a good sign. Pig iron output and prices have always been regarded as traditional "trade barometers." Financial circles have hailed the rise in price as a sign that general business again is on the up-grade.

* * *

ORDERS FOR RAILWAY EQUIPMENT

For the first seven months of this year orders for railway equipment are reported to total 1,808 locomotives, 69,646 freight cars, and 1,373 passenger cars. A slight drop in orders for railroad equipment is reported in July over June.

* * *

PRODUCTION OF CLAY INCREASES IN 1922

The output of clay mined and sold as clay in the United States in 1922 amounted to 2,647,700 short tons, valued at $8,330,514, or $3.15 per ton, according to the Department of the Interior, as determined by figures compiled by the Geological Survey. These figures show an increase of 52 per cent. in quantity and 38 per cent. in value as compared with those for 1921. The figures represent only clay sold as clay by the original producers; they do not include the much greater quantity of clay that was burned into clay products by the producers themselves.

The output of kaolin, the clay that is used in making high-grade pottery and porcelain as well as paper and other products, amounted to 275,675 tons, valued at $2,346,095, an increase of 69 per cent. and 49 per cent., respectively, as compared with 1921. The clay of largest production and value is fire clay. The sales of fire clay in 1922 amounted to 1,679,220 tons, valued at $4,633,486, an increase of 40 and 30 per cent., respectively, as compared with 1921. The output of every kind of clay as classified by the Geological Survey in its statistical report increased in quantity and value in 1922 as compared with 1921, except slip clay, which decreased slightly in quantity, and stoneware clay, which decreased in value.

The imports and exports of clay also increased in 1922 as compared with 1921. The total imports of clay were 350,570 tons, valued at $3,321,875, an increase of 68 per cent. in quantity and value. The imports of kaolin, the chief clay imported, amounted to 310,136 tons, an increase of 90 per cent. as compared with 1921.

* * *

EXPECT UPSWING IN TRADE

Based upon an intensive survey of business conditions which has been published in a series of articles recently, Iron Trade Review gives the following conclusions affecting the trend in future business:

1. Business has passed the crest of abnormal activities and probably will recede gradually, in a minor downward swing of the business cycle, to a line somewhere near the level of normal requirements during 1924.

2. In the absence either of excessive stocks of commodities, or of a stringency of credit and with business men conservative the country can face the immediate future with every confidence that there is no threat of an extended or severe period of liquidation similar to that which laid industry prostrate in 1921.

3. Competition probably will be keen and order books less congested, but opportunities for good business and fair earnings for alert well managed companies will not be wiped out.

4. The continued heavy consumption of goods, combined with moderate stocks, hand to mouth buying of distributors and curtailed production in some lines point to at least a temporary upward swing in trade and prices in the autumn.

* * *

QUICK-SETTING LIME TILE DEVELOPED

A cast lime building tile for use in making partitions has been developed at the Bureau of Standards by the Fellow of the National Lime Association. The material of which it is made sets so that it can be removed from the mold at the end of ten minutes. After twenty minutes it can be handled, and after seven days it has a compressive strength of one hundred pounds per square inch. It can be sawed, and nails can be driven into it.

The material is composed of five parts by volume of ground quick lime, ten of hydrate or slaked lime, and one of wood fiber. It is found to cure best when outdoors exposed to the weather. The new tile is about twenty per cent. heavier than gypsum tile of the same size, and experiments are being conducted to see if the core volume can be increased without too great a sacrifice of strength.

The quick setting lime of which the tile is made was developed several months ago by the Bureau of Standards, and can also be used for other purposes. Difficulty is found in shipping it, however.

* * *

CLAY BRICK SCARCE; CONCRETE BRICK USED

According to an item which appears in a contemporary paper, concrete brick have been used in large quantities in the East because of the scarcity of clay brick. It is reported that they have been used principally on large operations.

Our Method of Keeping Tab of Costs

Accompanying Illustrations Show How We Record Our Costs and Activities Each Day—For Small Plants This System Is Very Practical and Useful

J. C. Robinson

Secretary-Treasurer, Clay Products Corp., Hampton, Va.

THERE ARE a great number of small capacity clay plants in the country.. The clerical forces of such plants are as a rule very small and managers are loath to increase the staff of bookkeepers and clerks. For this reason a number of these small capacity plants either have no cost system or very inadequate, unsatisfactory ones. Any system which is simple, complete and satisfactory, requiring no additional clerical help would be hailed as a highly desirable thing in the industry.

A cost system which has these qualifications is now in use by the Clay Products Corporation of Hampton, Va. The entire system consists of but two sheets which act at once as payroll and cost sheets. It is not a new idea but has been in use on the plant for about six years, having been found entirely satisfactory during that time.

Two Sheets Make Up Cost System

J. C. Robinson, secretary-treasurer of the Clay Products Corp., explains the system in the following article:

"The accompanying illustrations show our Time and Activity sheets for the week ending December 7, 1922, illustrating our method of keeping tab on labor costs and activities. We like to have a record of what was done each day. This is shown on the Activity Sheet which at the same time also indicates the cost of doing the work.

How Sheets Are Divided

"Each sheet is divided into six columns, every column representing a week day. No column is provided for Sunday since burning is the only activity on that day, and this is included in the Monday column. Under the heading for each day there are four subdivisions which are indicated on the chart by the letters, M., S., B., D. These letters stand respectively for Making, Setting, Burning, Delivering. With a few exceptions all of our labor costs are divided into these four classifications. The exceptions are R. for repairs, and U. for unloading coal for kilns and boilers. R. and U. are not daily charges and therefore, to keep the sheet as small as possible we sandwich them in one of the four columns. The classification D. stands for labor in loading brick on our scows. (We ship only by water.)

"On days when we unload coal from a scow either to the kilns or boilers, we seldom load brick and so on that day the D. at the head of the column is changed to U. to represent the charge, unloading coal. The bookkeeper will then know that labor under that column is to be charged to the fuel account. A glance at the Time Sheet will show what is meant.

How Time Sheet Is Operated

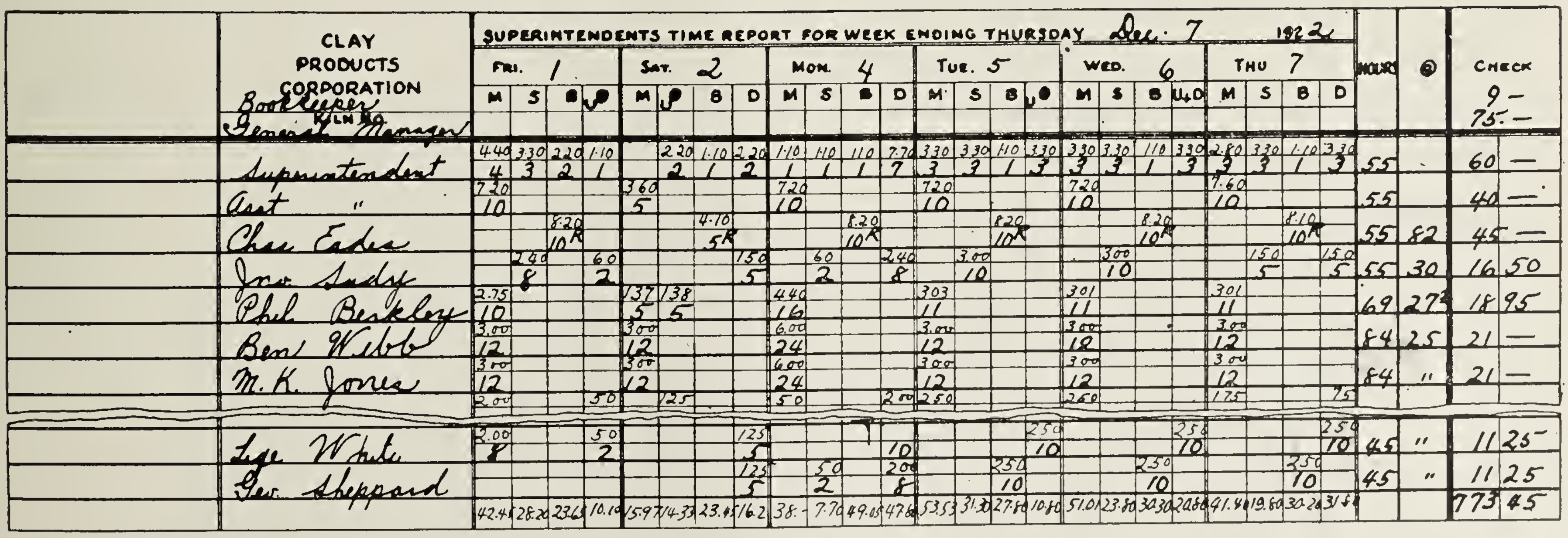
"On the Time Sheet it will be noticed that the horizontal lines on which are written the laborers' names are divided into two sections as indicated by a light line between the two heavy ones. After each day's work the superintendent puts opposite each workman's name the number of hours he worked, dividing the hours according to the classification at the head of the column. Thus, as in the case of John Sudy, his time is divided between setting (eight hours) and unloading (two hours). The time is inserted in the lower of the two sections. The upper section is filled in by the office and represents the dollars and cents value of the time.

"It may be well to explain here that black and red ink are used in making up the sheets. In the illustration the heavy lines represent the black figures on the original chart and the lighter lines, the red figures. All black figures are written on the sheet by the superintendent, while all red figures are inserted by the office.

The Activity Sheet

"It requires no more time for the superintendent to make these entries on the Time Sheet than it would to make them in a regular time book and but very little additional time is required for the Activity Sheet.

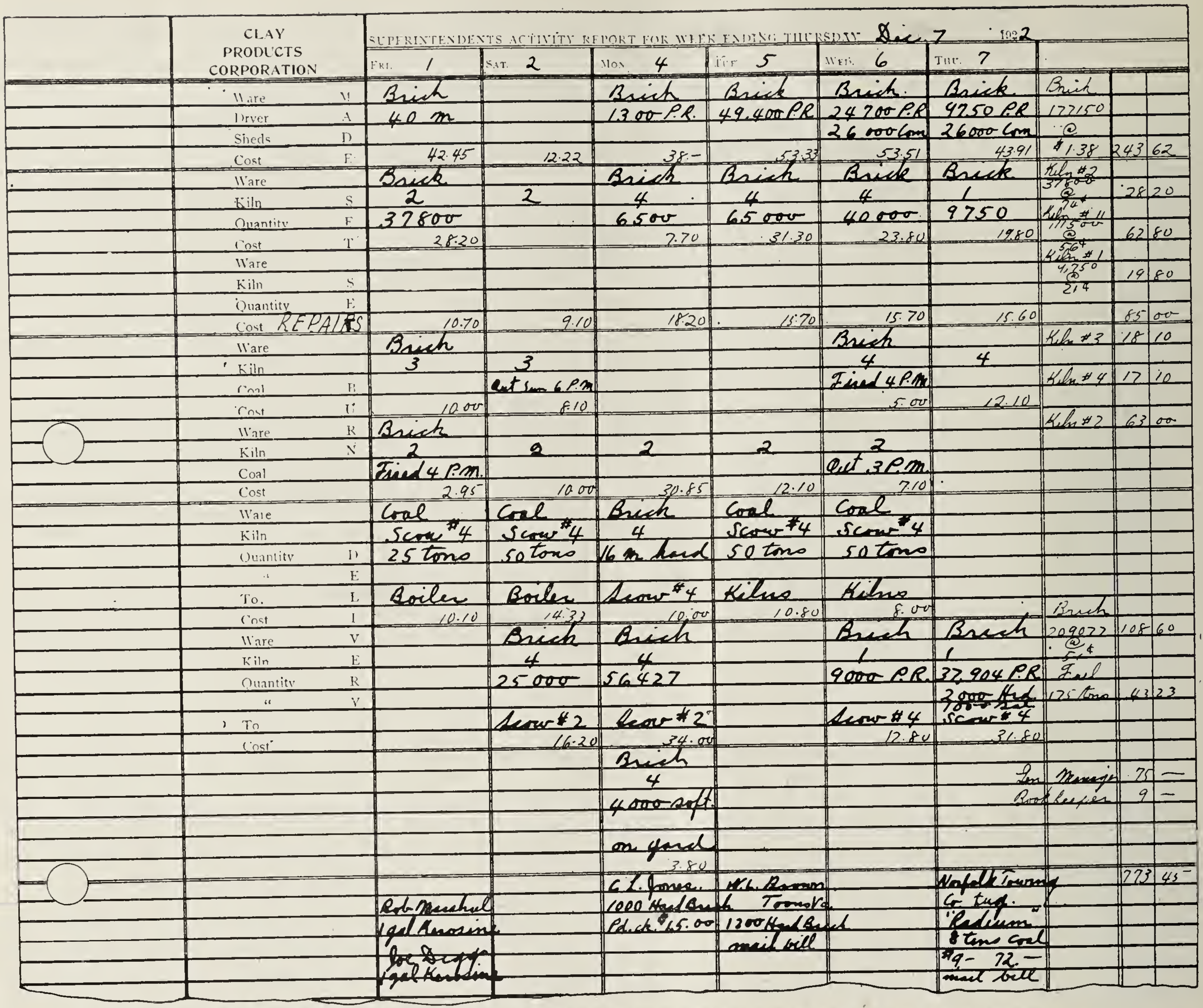
"To explain the workings of the Activity Sheet, note that the classifications M., S., B., D. are shown in the four sections



SUPERINTENDENTS TIME REPORT FOR WEEK ENDING THURSDAY Dec. 7 1922

CLAY PRODUCTS CORPORATION	Fri. 1				Sat. 2				Mon. 4				Tue. 5				Wed. 6				Thu 7				HOURS	@	CHECK	
KILN NO.	M	S	B	U	M	U	B	D	M	S	B	D	M	S	B	U	M	S	B	U+D	M	S	B	D				
Bookkeeper																											9	—
General Manager																											75	—
Superintendent	440 4	330 3	220 2	1.10 1		2.20 2	1.10 1	2.20 2	1.10 1	1.10 1	110 1	7.70 7	330 3	330 3	110 1	330 3	330 3	3.30 3	110 1	330 3	2.80 3	330 3	1.10 1	330 3	55		60	—
Asst "	720 10				360 5				720 10				720 10				720 10				7.60 10				55		40	—
Chas. Eades			8.20 10R				4.10 5R				8.20 10R				820 10R				8.20 10R				8.10 10R		55	82	45	—
Jno. Sudy		240 8		60 2				150 5		60 2		2.40 8		3.00 10				300 10				150 5		150 5	55	30	16	50
Phil. Berkley	2.75 10				137 5	138 5			440 16				303 11				301 11				301 11				69	27²	18	95
Ben Webb	3.00 12				300 12				6.00 24				3.00 12				300 12				3.00 12				84	25	21	—
M. K. Jones	300 12				300 12				600 24				300 12				300 12				300 12				84	"	21	—
	2.00			50		125			50			200	250				260				1.75			75				
Lige White	2.00 8			50 2				125 5				10				250 10				250 10				250 10	45	"	11	25
Geo. Sheppard								125 5		50 2		200 8			250 10				250 10				250 10		45	"	11	25
	42.45	28.20	23.65	10.10	15.97	14.33	23.45	16.2	38.-	7.70	49.05	47.60	53.53	31.30	27.80	10.80	51.01	23.80	30.30	20.80	41.40	19.60	30.20	31.50			773	45

Part of the Clay Products Corporation's Time Sheet Is Shown Here. A Number of Names Have Been Omitted Due to Lack of Space. This Is One-Half of the Company's Cost System



CLAY PRODUCTS CORPORATION

SUPERINTENDENTS ACTIVITY REPORT FOR WEEK ENDING THURSDAY Dec. 7 1922

		Fri. 1	Sat. 2	Mon. 4	Tue. 5	Wed. 6	Thu. 7			
Ware	M	Brick		Brick	Brick	Brick.	Brick.	Brick		
Dryer	A	40 m		1300 P.R.	49.400 P.R	24700 P.R	9750 P.R	177150		
Sheds	D					26 000 Com	26000 Com	@		
Cost	E	42.45	12.22	38.–	53.33	53.51	43.91	$1.38	243	62
Ware		Brick		Brick	Brick	Brick	Brick	Kiln #2		
Kiln	S	2	2	4	4	4	1	37800 @ 74¢	28	20
Quantity	E	37800		6500	65 000	40000	9750	Kiln #11		
Cost	T	28.20		7.70	31.30	23.80	19.80	111500 @ 56¢	62	80
Ware								Kiln #1		
Kiln	S							4,750 @	19	80
Quantity	E							21¢		
Cost REPAIRS		10.70	9.10	18.20	15.70	15.70	15.60		85	00
Ware		Brick				Brick		Kiln #3	18	10
Kiln		3	3			4	4			
Coal	B		Out Sun 6 P.M			Fired 4 P.M		Kiln #4	17	10
Cost	U	10.00	8.10			5.00	12.10			
Ware	R	Brick						Kiln #2	63	00
Kiln	N	2	2	2	2	2				
Coal		Fired 4 P.M.				Out 3 P.M.				
Cost		2.95	10.00	30.85	12.10	7.10				
Ware		Coal	Coal	Brick	Coal	Coal				
Kiln		Scow #4	Scow #4	4	Scow #4	Scow #4				
Quantity	D	25 tons	50 tons	16 m hard	50 tons	50 tons				
"	E									
To.	L	Boiler	Boiler	Scow #4	Kilns	Kilns				
Cost	I	10.10	14.33	10.00	10.80	8.00		Brick		
Ware	V		Brick	Brick		Brick	Brick	209077	108	60
Kiln	E		4	4		1	1	@ 5¢		
Quantity	R		25 000	56427		9000 P.R.	37,904 P.R.	Fuel		
"	Y						2000 Hrd. 1800 Sal	175 tons	43	23
To			Scow #2	Scow #2		Scow #4	Scow #4			
Cost			16.20	34.00		12.80	31.80			
				Brick						
				4				Gen Manager	75	—
				4000 soft				Bookkeeper	9	—
				on yard						
				3.80						
				C. L. Jones.	W. L. Bosman		Norfolk Towing		773	45
		Rob Marshal		1000 Hard Brick	Toano Va.		Co. tug.			
		1 gal Kerosine		Pd. ck. $65.00	1200 Hard Brick		"Radium"			
		Joe Diggs			mail bill		8 tons coal			
		1 gal Kerosine					$9 – 72.–			
							mail bill			

This Is a Copy of the Activity Sheet Used by the Clay Products Corporation as Part of Its Cost System

divided by horizontal double lines and can be recognized by the vertically written words, MADE, SET, BURN, DELIVERY. The vertical columns are for the week days like on the Time Sheet. In consulting the Activity Sheet, we find that on Friday, the men made brick for about eight hours, a total of 40,000 brick being made at a cost of $42.45. This latter figure is obtained by totaling column M. on the Time Sheet. Column S. of the Time Sheet shows that $28.20 was expended for setting. According to the Activity Report, brick were set in kiln No. 2 in the amount of 37,800 at the cost of $28.20.

Entering Charges on the Sheets

"After the making gang had finished making brick on Friday, they were transferred to the wharf and finished up the day unloading coal. The superintendent estimated that they unloaded 25 tons, the cost of which is shown at the foot of column U on the Time Sheet and is $10.10. Referring again to the Activity Report, we find that in the section marked DELIVERY, the superintendent has marked 25 tons of coal unloaded from scow No. 4 and taken it to the boiler at a cost of $10.10.

"On Wednesday, December 6, seven men worked on the scow a full day, both unloading and loading. They unloaded 50 tons of coal, delivered it to the kilns, and loaded 9,000 face brick. This is shown on the Activity Sheet in the section marked DELIVERY, the brick being taken from kiln No. 1 and loaded on scow No. 4. During this week of December 7, we were repairing kilns, time for which is sandwiched in the columns as indicated by an R. opposite the time of the workman, Charles Eades.

Charging Repair Items

"To illustrate how this works out, on Friday, December 1, the time of the bricklayers and helpers who were working on repairs, is shown in the B. column of the Time Sheet and indicated by an R. after the hours entered. The bricklayers' time amounted to $8.20, the helpers' time to $2.50, a total of $10.70. The total footing of the B. column is $23.65. From this must be subtracted the $10.70 expended for repairs, leaving a total of $12.95 for burning cost on that day. This burning cost is again shown on the Activity Report in the column Friday, and in the section labeled BURNING. This is a little complicated but we would rather do it this way than make the sheet too large. Of course, if any one desires, any amount of columns may be ruled on the Time Sheet, being limited only by the desire to simplify things as much as possible.

"The superintendent divides his time up under the various headings as he thinks proper. The manager's and bookkeeper's time is charged to the office, but is also shown in the Time Sheet, so that this sheet will show all costs for labor and salaries.

Cost of Making Brick

"The brick machine work is indicated on the Time Sheet under the column M. and on the Activity Sheet in the section labeled MADE. Thus the cost for labor in making 40,000 brick was $42.45, or $1.06 per 1,000 on Friday, December 1, as indicated on the Activity Sheet. On Monday the brick machine was run only two hours, making 13,000 brick at a cost of $38, or about $3 per 1,000. The average labor cost for the entire week was 1.38 per 1,000 brick, which was to a cent the average cost for the entire year.

"The setting gang worked eight hours on Friday, setting and putting up 38,700 brick at a cost of $28.20 or 75 cents per 1,000. The average for the week was 66 cents per 1,000, which compared with an average of 72 cents for the entire year.

Space for Explanations

"Space is provided at the bottom of the Activity Sheet for memoranda by the superintendent. This space he finds valuable for making explanatory remarks when unusual circumstances have retarded production or similar difficulties have arisen. Sometimes he says, 'rain, bank in bad shape,' or 'moved track,' to explain a poor day's run. In these spaces he also enters sales which are made directly at the plant and which with us are very few. Any charges he may have against the men are also set down here.

We have had this system in use for about six years and it suits us better than any we have ever seen. It shows on one sheet a week's time and a week's operation and for that reason is suited to those who pay their men weekly. No doubt it could be modified or changed to suit conditions on other plants. While we have found the sheets satisfactory as they are here printed we believe another column for each day on the time sheet will be an advantage and will simplify the footings on some days. A carbon copy of these sheets is made at the plant so that the superintendent has a copy for his own files.

System Could Be Adapted to Other Plants

"While this system may not exactly suit other factories, we believe that this plan of double sheets, which is original with us so far as we know, may suggest methods that will be helpful to others and it may be that with a few changes the system can be adapted to the needs of other manufacturers.

"While we are satisfied with our six divisions of labor costs there is no reason why these could not be increased to any number at the discretion of the management."

* * *

Millions of Foreign Brick Pouring Into United States

WHILE ACCURATE RECORDS of brick importations so far in 1923 are not yet available, the fact that in the construction of a housing colony at Corona and Astoria, Long Island, which the Metropolitan Life Insurance Co. is financing and Henry C. Irons, architect, 101 Park Avenue, New York, supervising, not less than 10,000,000 imported brick are being used that Frank D. Creamer & Co., building brick the other day from Germany, and that on board the SS. "Mongolia" due to arrive at New York from Hamburg on Wednesday, August 8, is a shipment of German brick, the weight of which is given in the manifest as 800 tons, goes to show that the movement of European brick to the United States has assumed large proportions.

Brick Consigned to Banks

A good deal of brick has been coming in consigned to banks, the Mechanics and Metals National Bank receiving 500,000 the other day ex. SS. "Fuerst Buelow" from Hamburg. These shipments, in which banks figure as the consignees, are mostly for account of local importers, the terms of purchase being cast against documents upon presentation of the latter by the bank. The importers, in turn, sell the brick to local dealers. In short, the dealings in European brick have become sufficiently impressive to justify the industry giving them some thought.

It would be exaggerating matters, however, to say that Hudson River brick manufacturers are perturbed by these importations. The reason for their equanimity in the face of what in other industries would be considered as a menace, is that so far there have been two buyers for every brick they could turn out, and Hudson River Brick during July were really scarcer than the proverbial hens' teeth. More than this factor, however, the preference which is given to Hudson river brick over imported is well established, so much so that buyers freely state that they are always ready to pay $2 to $3 per M. more for the domestic than the imported product when they can get the former. The only reason why they are buying imported brick at this time is that they must have brick and when they can not get Hudson River, they will take the imported.

The brick going into the Metropolitan Life housing colony is, so Henry C. Irons told Brick and Clay Record's representative, the product of plants in Holland, where the brick industry is merged into a trust embracing about 80 producers, the largest plant being that of Waalstyn. There have also been some importations from Belgium and France. A prominent New York importing house made a thoro survey of the situation with a view to determining whether to take up the importation of brick on a large scale. They reached the conclusion that it would be unprofitable because the only way in which it would pay, would be to bring in entire cargoes which would have to be at least 5,000,000 brick. This, they found, they would have to split into ten or more barge loads to distribute the material, and they felt that this would entail too much risk.

Germany Looking for Dollars?

Hudson River Brick manufacturers look upon the importation of Dutch, Belgian and French brick as a temporary condition, but they are puzzled regarding the character of the German shipments. Some think that Germany, in dire straits to obtain American dollars and sold out of everything else, has finally had recourse to brick as a means of obtaining funds. Others, however, believe that Germany is making a determined effort to gain a footing in the American market. They base their opinion on the fact that clay, sand and lime are raw materials in which Germany is self-contained and that her merchant marine has grown so much that trans-Atlantic cargoes must be provided, even tho it be at ballast rates. Certain it is that when domestic brick producers again have a breathing spell, they will do some deep thinking about German brick and the question of removing common brick from the free list of the Fordney-McCumber tariff law.

Proper Method of Loading Tile

Shippers Should Follow Prescribed Rules for Loading Adopted After Thoro Study of Subject —Means Economy and Satisfied Customers

F. R. Hale

General Manager, Vigo-American Clay Co., Terre Haute, Ind.
Chairman, Traffic Committee, Hollow Building Tile Assn.

ABOUT TEN YEARS AGO, in order to ascertain the best methods of loading hollow building tile to insure the minimum amount of breakage in transit and switching, the railroads in various sections of the country where tile was being produced in large quantities, made a careful study of the situation. Representatives of the various railroad companies interested visited the plants in order that they might better acquaint themselves with the product and also inspect the diverse loading methods then in effect. They even followed the cars thru to their destinations in order to study the load actions while in transit and to view at first hand the methods employed in unloading.

A Wrong Method

During the course of this survey they found that some cars were loaded only in the ends and the space in the doorway bulkhead. It was determined beyond question, that when this method was employed, unless an excessive amount of lumber was used, the bulkheads had a tendency to work out of place during rough handling of the cars, thereby allowing the tile to shift with each end-thrust of the car. This method was generally branded as being inefficient, as it was not only very expensive, but a poor guarantee against breakage.

The authentic data obtained by these personal inspections enabled the railroad companies to formulate a correct method of loading the ware, and when the Southern Weighing and Inspection Bureau called a meeting at Atlanta, Ga., about two years ago to consider this subject with hollow building tile shippers, it was decided that the solid loading from end to end of the car should be required as the most efficient means of avoiding breakage. Shortly after, this subject was taken up by the various classification committees, with the result that the consolidated classification now requires tile to be loaded as follows:

Load According to These Rules

"Hollow building tile must be loaded solid from end to end of car with cells running horizontally and lengthwise of car. Load with staggered joints if necessary to take up any voids at sides of car, and all doorways to be boarded sufficiently to prevent tile from falling against doors of car."

To load in accordance with these rules, the loader must first ascertain the inside dimensions of the car to be loaded and figure out how many tile must be loaded in each tier to make the load at the doorways finish the same height as the ends of the load. The first tier must be loaded tightly against the end of the car and all subsequent tiers loaded tightly against the preceding ones so that there will be no end play in the load, as it is this end play that causes damage when the slack runs up in the train or the car receives a severe end-thrust in switching. As outlined in the prescribed rule, it is permissible to take up any side play by staggering the joints to make the tiers reach each side of the car when the sizes being loaded do not exactly fill the space.

Secure Ends Thoroly

Upon reaching the doorway, boards about one inch by four or six inches in size should be nailed inside the door post at points where they will keep the top two or three tile from falling against the door. The weight of the tile on top will keep those below from working out and it is only

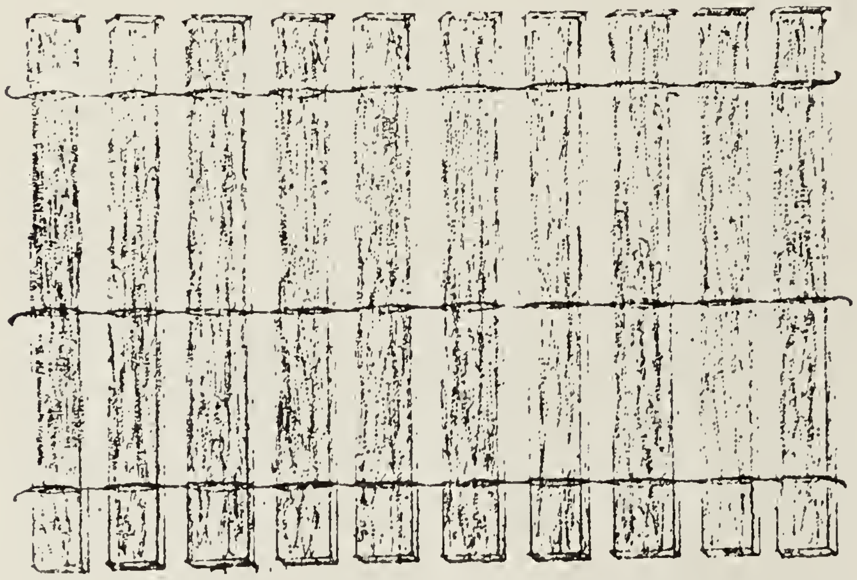


Fig. 1. Wire Gate Fastened at Top, Center and Bottom. This Makes a Good Gate Provided Two Strands of Wire Are Used and the Wire Is Closely Wrapped Around Each Upright. Where Only One Wire Is Used and Fastened by Staple, the Uprights Are Apt to Work Loose and Fall Over

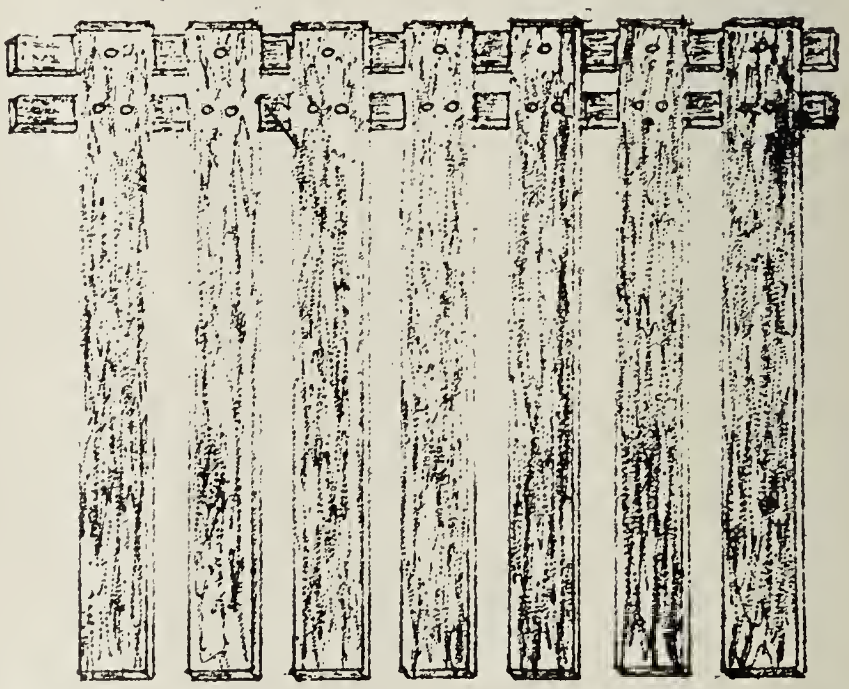


Fig. 2. Gates Fastened Together at Top by Two Strips of Wood Make a Poor Gate When They Extend Only to Center of Pipe for the Reason When Loading a Car With One Inch Gates and One Inch Cross Pieces Where Cross Piece Comes to the Center of Top Layer, Top Layer Must Extend One Inch Ahead of the Layer Under It. That Allows Tile a Chance to Shift

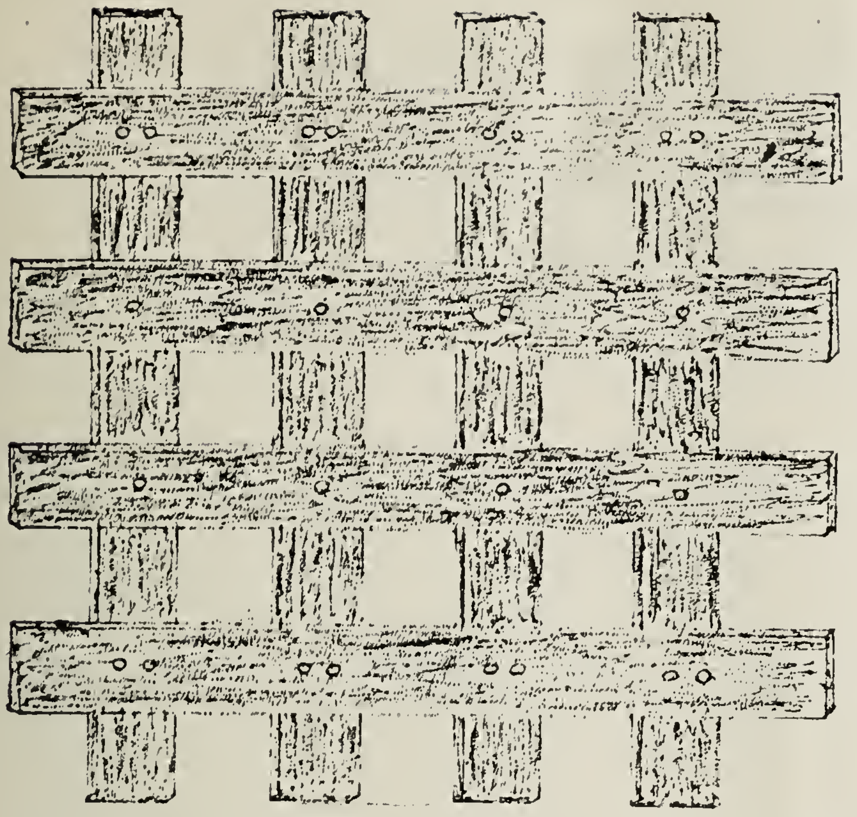


Fig. 3. This is a Better Gate. It Is Generally Called "Partition Gate." It Does Not Matter Where It Comes in the Tier, It Has the Same Level Surface, and Even If There Are Some Bad Places in the Gate and They Break, the Balance of Gate Will Still Hold Tile in Place

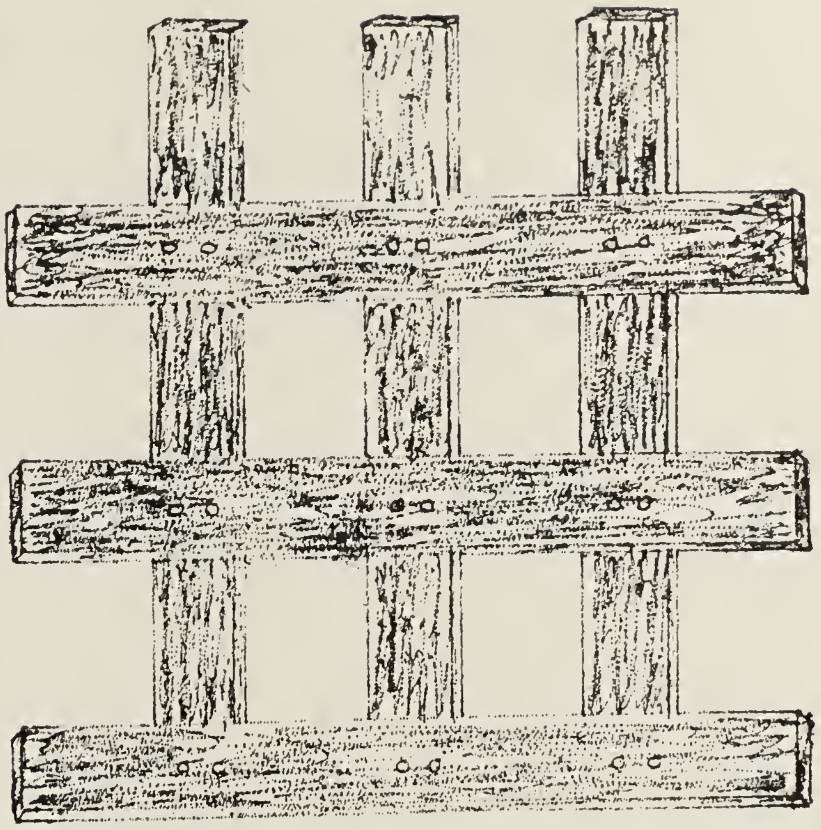


Fig. 4. Here the Upright Boards Hold the Crossboards in Place, the Crossbars Are the Ones that Hold the Tile. If the Crossboard Only Comes to the Bottom of the Top Layer of Pipe or Tile, It Is Liable to Tip. Top Crossboard Should Come to or Above Center of Top Row of Pipe or Tile

necessary to protect the top as mentioned. The doorways should then be loaded solid with the remainder of the tile. If loading the tile lengthwise with the car leaves a space at the doors, the tile should be turned and loaded so as to fill the door space solid, as solid loading is much more important than to follow strictly that portion of the rule dealing with the direction of the cells. When the doorways are filled, boards should be nailed inside similar to the method described dealing with the opposite side of the car, in order to keep the tile from falling against the door. Some loaders merely place these boards inside without nailing when the tile below are sufficiently tight against the sides to support the ends, but it has been found the load shifts enough in transit to allow the boards to slip down and the tile to fall against the door. In all cases, therefore, it is advisable to nail the boards at each end of the door posts.

No Breakage When Properly Packed

Experience has shown that there is practically no loss when cars are loaded in the manner described, unless they receive unusually rough handling en route, and even in cases where cars have been broken by rough switching, little damage was done to the tile.

Breakage in shipping is not only a loss and a grave disappointment to the customer, but it tends to give the commodity a bad name which directly reflects on the industry as a whole. To satisfy the customer and uphold the name of the product of the industry, each shipper should do his best to follow the prescribed rules, as they are the results of long experience and outline the most efficient and economical system known.

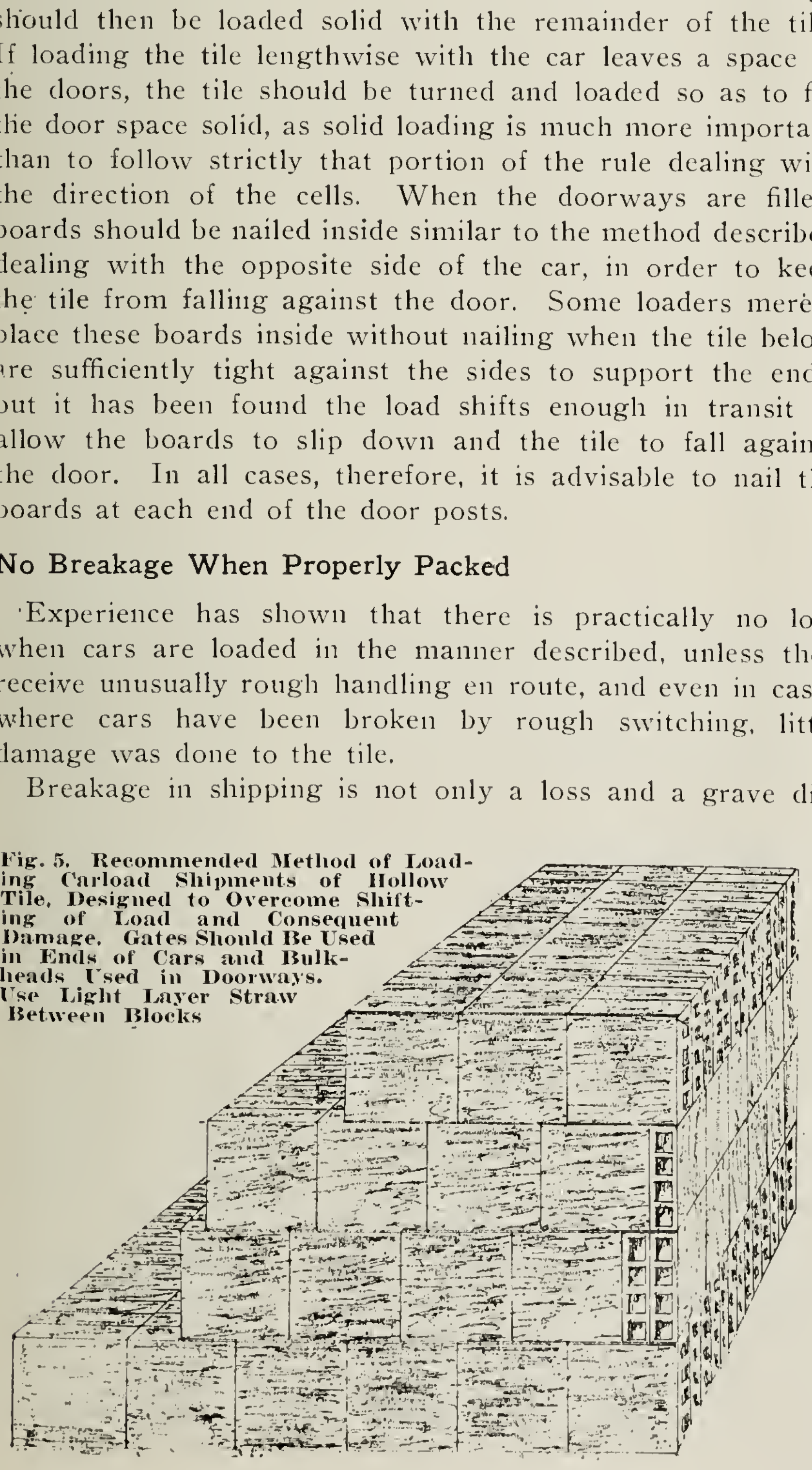


Fig. 5. Recommended Method of Loading Carload Shipments of Hollow Tile, Designed to Overcome Shifting of Load and Consequent Damage. Gates Should Be Used in Ends of Cars and Bulkheads Used in Doorways. Use Light Layer Straw Between Blocks

* * *

TO GIVE SHORT COURSE ON DISTRIBUTION

Retail and wholesale distribution will be a subject for special discussion at the coming session at Northwestern University, August 19 to September 1, of the National School for Commercial and Trade Executives. This course will be directed by Alvin E. Dodd, manager of the Domestic Distribution Department of the Chamber of Commerce of the United States.

Commercial organization and trade association secretaries from virtually every state in the Union will attend the school this year. Some of the more important fundamental courses to be given are psychology, economics, business and government, marketing and distribution, public speaking, journalism, salesmanship, industrial promotion and transportation.

Ways and means of accurately surveying the wholesale and retail purchasing power and capacity of a town or city will be one of the topics to be considered by the distribution groups. This will be considered both from the standpoint of the individual consumer and from the commodity standpoint. The annual statistical consumption in a certain locality of clothing, furniture and house furnishings, food, fuel and similar primary commodities will be considered.

In preparation for this course, the Distribution Department of the National Chamber, under the direction of Mr. Dodd, has compiled a large amount of data as to the feasibility of such a statistical compilation. One moderate size city has already been surveyed and the results will be announced for the first time thru these studies.

Cooperation among business men and ethical advertising will be considered also from retail and wholesale angles by this Distribution Group.

Selling Brick to the Public

How Other Business Men Would Sell Your Product, as Discussed in a "Give-and-Take-Club," Is Told Herein—New Angles to an Old Problem

Frank H. Williams

IN A CITY in Indiana there is a "Business Men's Give-and-Take Club" comprised of live wire business men.

Included in the membership of this organization are representatives from such businesses as these: Brick manufacturing, building supplies, realtor, drug store, jewelry store, department store manager, men's clothier, and so on.

Recently the topic up for discussion at the regular meeting of the club was the face brick business and ways and means by which the manufacturers and jobbers of face brick can sell more goods. During the course of the discussion some very interesting and worth while points were brought out.

Advertise Homes Built of Your Brick

The main things said at this meeting of the Business Men's Give-and-Take Club were:

The Department Store Manager—"If I were a face brick manufacturer I'd see to it that a list of all the homes which were erected in the city each month or each quarter which were faced with the brick I made, was published in the local newspapers. I'd put the list into the papers as an advertisement and I'd use with it some copy urging folks to go around and look at the homes and notice how fine they looked and then realize how much more valuable they will be ten years from now than the frame houses erected at the same time.

Tell Public of Comparative Costs

"Also if I were a manufacturer or a distributor of face brick in this city I'd get the actual costs on the local houses faced with my brick and I'd compare these costs with the costs of putting up plain frame homes of the same size at the same time. And I'd show just what the rate of depreciation was and all that sort of thing so that I'd have concrete and specific facts and figures to show all prospective purchasers of my brick.

"It strikes me that definite and specific figures of this sort would go over big with many folks and would be a big help in convincing them that they should use face brick for their homes."

The Jeweler—"It strikes me that it would be a help to the face brick manufacturers and distributors if they displayed more of a disposition to show samples of various kinds of brick to prospective home builders and to help the prospective home builders out with plans and so on.

Does Public Know Where to Buy Brick?

"I'm making this statement because of my own experience or, rather I should say, lack of experience with face brick manufacturers.

"I'm going to put up a new home and, of course, I'm looking around to see just what sort of a home I should put up. Now if one of the local brick manufacturers was running an advertisement in the local papers offering to show me samples of brick, and to take me around to see homes which have been faced with his brick, I'd be sure to ask for such help. But none of the local manufacturers are running such advertising, and——"

The Brick Manufacturer—"Thanks for the tip. I'll get your signature on the dotted line right after you get thru talking."

The Jeweler (Laughing)—"I'm afraid I've let myself in for something. But I mean what I say,—One of the best ways of getting more business nowadays is by showing a disposition to render more service to prospects and to customers. And it seems to me that there is a splendid field along the line I've indicated for the brick manufacturer and distributor to render more service and thereby get more business."

Wants to Know How Brick Are Made

The Music Store Proprietor—"I'd like to know just how face brick are made. I've never been in a brick manufacturing plant in my life. I know that they are made out of clay and that they are baked and that's just about as far as my knowledge of brick goes.

"It strikes me that the brick manufacturers would be doing a good stunt if they would stage a 'Brick Style Show' or something like that during which they would have open house at their plants and during which the public would be invited to come and see just how brick are made and just what the latest and prettiest styles in brick are and all that sort of thing. I'm sure that such a stunt would get a great amount of attention for the brick manufacturer and would get him a lot of publicity, too, all of which would be splendidly helpful in getting him more business."

Placard the New Homes

The Florist—"If I was in the face brick manufacturing business or in the building supply business I'd see to it that in front of each new home for which I furnished the brick a sign was put up reading about like this:

" 'Another Home on Which the Depreciation Will Be Very Slow.

" 'Homes faced with our brick are worth more in ten years than frame homes.

" 'Get actual figures on this important fact from us and let us tell you about the brick we've furnished for this home and for other splendid homes.'

"Then I'd follow this with the name and address and telephone number of my company.

"This sort of a sign would be sure to attract a considerable amount of attention and by doing so it would be certain to help the brick manufacturer or distributor quite considerably in selling more brick."

Tell the Unusual Things

The Confectioner—"It would interest me and make me think of face brick for homes and would, therefore, probably interest a lot of other average folks like myself if the brick manufacturer or distributor would get a rather novel note into his advertising by telling some unusual facts about the homes in his city faced with his brick. For instance, how many brick are used in facing an average home? How long does it take to face a home with brick? How many thousands of brick have been used in facing new homes put up in the city during the present year? And so on."

The Brick Manufacturer—"All of which has been exceedingly interesting to me and all of which, I am sure, has given me some fine ideas which I can use to good advantage."

And all of which it is hoped will prove equally interesting and valuable to other brick manufacturers and distributors. And if this proves to be the case then the writing of this report of this meeting will have been well worth while.

The Entire Clay Manufacturing World

will be interested in knowing that considerable progress has been made in the arrangement of details affecting the proposed test on a kiln equipped with Gates automatic stokers. This proposition which developed at the time the last issue of Brick and Clay Record went to press will be discussed in greater detail in subsequent issues of Brick and Clay Record. Watch for developments.

BEG YOUR PARDON

An item appearing in the July 10 issue of Brick and Clay Record stated that Sheffield (Ia.) Shale Tile Co. had been sold to Messrs. Cook and Webber of Chicago and that O. E. Cook was president of the National Brick Co. of Chicago. This item was in error. Mr. Cook is general superintendent of the National Brick Co. and Mr. Webber is the president. Mr. Cook is president of the Sheffield Shale Tile Co., and this plant is located in Sheffield, Ill., and not in Sheffield, Ia.

Brick and Clay Record desires also at this time to call attention to an error in the July 24 issue. In the caption opposite the illustration of a gondola car unloader, it was stated that this equipment can unload cars at the rate of 40 per minute. Quite obviously this was a typographical error and should have read 40 per hour.

* * *

CHINESE BRICK ARRIVE IN CLEVELAND

First photo of the brick from the Great Wall of China, obtained by associates for Dana T. Bowen, head of the Bowen Brick & Supply Co., Cleveland, Ohio, is published by Brick and Clay Record. As has been told in this paper in a previous issue, it took two years to obtain this specimen of one of the oldest structures on this earth, cost the life of at least one worker, and had as much difficulty in leaving China as any foreigner in that country has of getting about.

In the pictures taken by Mr. Bowen the inscription placed upon the brick, which tells of its age, origin, and its maker, shows up plainly. In the exact center of this side of the brick is the maker's trade mark, but this is so obliterated by time, and never was particularly clear in the first place, Cleveland Chinese assert, that it cannot be distinguished in the picture.

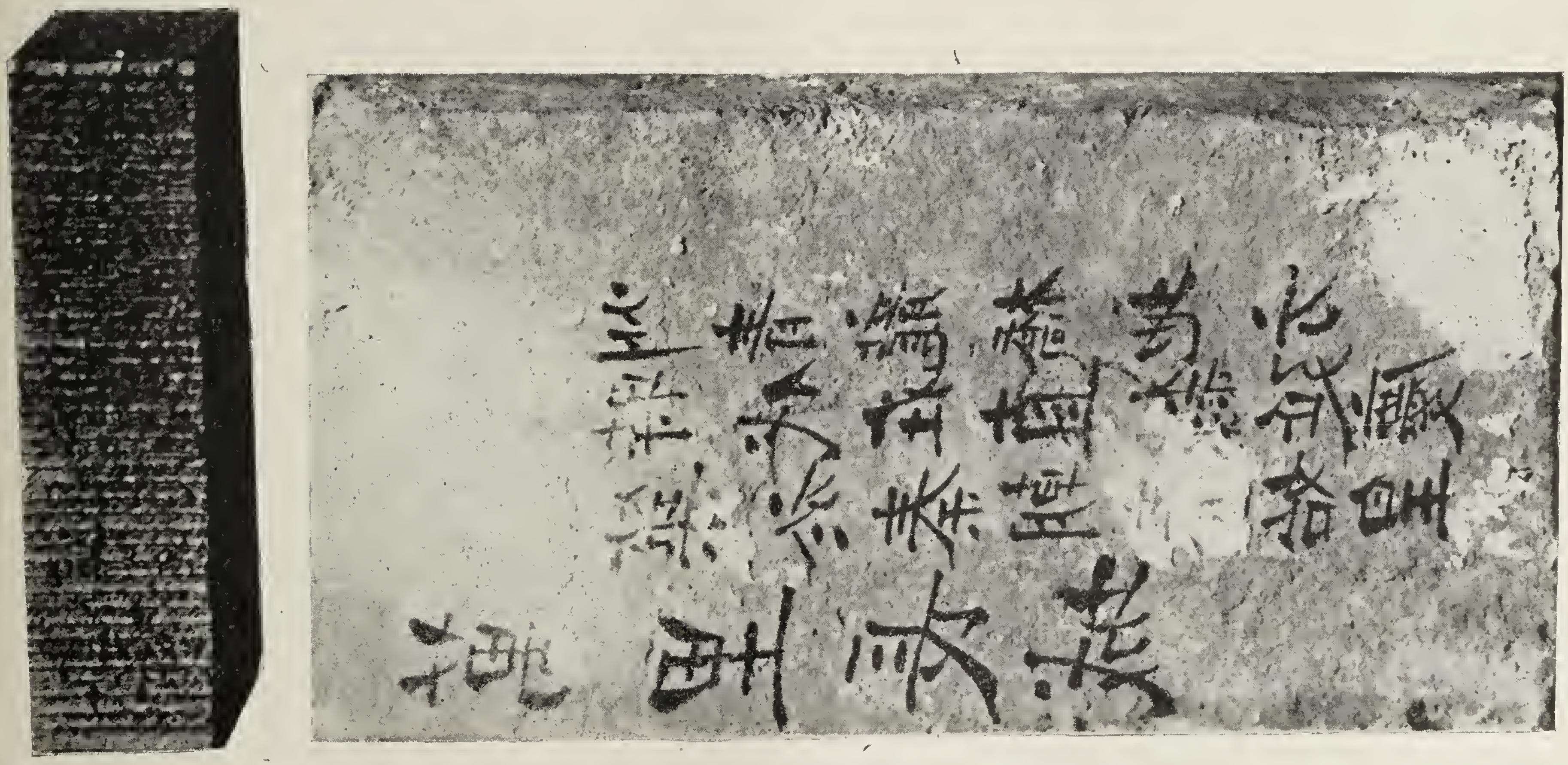
The Chinese brick is shown beside a modern face brick, which gives not only an accurate idea of its enormous size, but also how brick making has improved during the centuries the "rock" from the Flowery Kingdom has been in existence.

* * *

STILL A MILLION HOMES SHORT

Rudolph R. Miller, formerly city building inspector for New York City and recently appointed chairman of the National Board of Jurisdictional Awards, which is affiliated with the American Federation of Labor and was in session during the week of July 30 in Atlantic City for the purpose of disposing of labor controversies, declared that there is still a shortage of 1,000,000 homes in this country. Mr. Miller stated that this condition, combined with other causes, would keep the building trade exceptionally active for many months. He declared that labor generally was contented and that no difficulties of any insurmountable nature were in sight.

Members of the board expressed the belief that there would be no change in the near future in the scale of wages of plasterers and bricklayers, despite the agitation in some quarters. They asserted that there was still a great shortage of these mechanics and there was no relief in sight unless the bars against apprentices were let down.



Brick Specimen Taken from the Great Wall of China. Note Comparison in Size to Standard American Brick. It Took Two Years of Strenuous Effort to Bring This Specimen into This Country.

Development of Colors in Face Brick

Color Range of Twenty-five Different Shades Repeated with Certainty Thru Control of Mixing and Burning of Clays—Experimental Kiln Has Been Valuable Help

O. A. Harker, Jr.

Dixie Brick and Tile Co., Puryear, Tenn.

THAT which I have to offer here is largely the results of our own experience in burning brick in periodic down draft kilns, and I have no doubt that some of you will disagree with my deductions.

As a foreword, these deductions result mainly from observations which I have made while manufacturing brick for commercial purposes, altho some of them are from observations made while burning our experimental kiln. In passing, let me say just a word about an experimental kiln. It is a very great help to have an experimental kiln. It is a very great help to have one on a plant, especially if one is just entering upon the business of producing face brick, or on an old established plant where a variation in the clay deposit or shale bank is encountered, and even more so where the brick are made from a mixture of two or more clays of entirely different chemical compositions. Our own experimental kiln holds about 2,000 brick.

Our white burning clay deposit contains five different strata while our red burning clay pit has two strata. Thus we have been able to effect many combinations, which we otherwise could not have done had our natural resources been confined to one kind of clay. Altho our experimental kiln has long since ceased to serve the purpose for which it was built, it has been the means of saving us a good many dollars thru the elimination of errors which would have been costly in a commercial kiln. However, I want to say, from our experience, that one cannot always reproduce in the commercial kiln the color tones obtained in the experimental kiln. This is probably due to the shorter time required to burn off the experimental kiln.

Color Theory and Brick

The resultant color of face brick is so intimately connected with every phase of manufacture that it would be impossible to discuss adequately in this paper every element pertaining thereto. As a premise for this discussion we will have to forget part of that which was impressed upon us in our younger days when we studied the spectrum. You will remember that we were taught that white is the combination of all colors and black is the absence of color. As practical brick manufacturers, we know that white denotes the absence of coloring matter, while black indicates a great deal of it. Hence we may safely say that every color developed in face brick is the result of a coloring chemical combination and a chemical reaction. Both the combination and the reaction play a very important part in the result obtained.

Chemical Combination Varies in Every Brick

If it were possible to have the same chemical combination present in every brick in the kiln and to have the same chemical reaction in all parts of the kiln, other things being equal, we would have every reason to expect that all the brick in the kiln would be the same color. However, in commercial practice this is impossible, not only on account of the variation encountered in the clay pit or shale bank, but also on account of the setting of the brick in the kiln, the difference in the proximity of the various brick to the fire-boxes, the difference in the temperature of various parts of the kiln and the variableness in grinding and processing.

Iron Most Potent Coloring Element

The most potent natural coloring matter we find in clay is iron; hence any condition in the kiln which tends to change the composition of the iron, either by itself or in combination with some other ingredient, will affect the color of the brick. For the purpose of this discussion, let us consider only the two forms of iron which are most commonly encountered by us in the manufacture of ceramic ware, namely, ferric oxide (Fe_2O_3), the red oxide of iron, and ferrous oxide (FeO), the black oxide of iron. As you know, the one may be changed to the other thru chemical reaction. This reaction is brought about by the change in the condition of the kiln, that is, the change from oxidizing to reducing conditions. To effect this change in the condition of the kiln we change the resultant gases of combustion. From carbon dioxide (CO_2) the product of complete combustion which we get when the stack damper is high and the fire-boxes are open with bright burning fires, we change to carbon monoxide, (CO), the product of incomplete combustion, which we get by lowering the stack damper and closing tight the fire-boxes, not allowing enough air to enter the kiln to effect complete combustion of the gases as fast as they are distilled from the coal.

How Carbon Monoxide Acts

As it is the tendency of carbon monoxide gas to take on another atom of oxygen from whatever source with which it may come in contact, so that complete combustion may take place, it draws one atom of oxygen from the ferric oxide in the brick. Hence we have the following chemical equation: $Fe_2O_3+CO=FeO+CO_2$; thus changing the red oxide of iron in the brick to the black oxide of iron, which in turn determines the color of the brick according to the amount of reduction taking place and the presence of other natural ingredients which may be in combination with the iron. As soon as enough oxygen is taken from the ware to effect complete combustion, thus changing the composition of the gas in the kiln from carbon monoxide to carbon dioxide, there is, of course, no further reduction of the iron in the ware subsequently surrounded by the gas on its travel thru the kiln. For this reason, we have greatest reduction of the iron in those brick set high in the kiln and close to the bag walls, where the carbon monoxide first comes in contact with the ware.

Reducing Conditions

You have all noticed that when brick are set flat in the kiln and reducing conditions are brought about, the face of

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Editor's Note.—An address by O. A. Harker, Jr., president, Dixie Brick and Tile Co., Puryear, Tennessee, before the Southern Division of the American Face Brick Association at Birmingham, Ala., on Wednesday, June 27, 1923.

the brick is dark, while the center of the brick on the side which is not exposed to the gases, is red and also that the higher in the kiln, where greatest reduction takes place, the deeper the color of the face and the smaller the red center; while lower down in the kiln, the lighter the face becomes and the larger the red center grows, until at the bottom of the kiln the brick are all red. This leads us to the conclusion that were it possible to surround every brick in the kiln with carbon monoxide and maintain that condition for a sufficient length of time, we could expect to have all dark brick in the kiln. But this is not possible in our ordinary commercial kiln, nor would it be practicable to try it, for the reason that the reduction taking place in the top of the kiln would be so great that the alkalis and other fluxes present in the clay would enter into combination with the ferrous oxide and result in what we term melted brick or an overburn. Consequently, we find that the best practice is to carry on this reduction only just so far as it will get the necessary color tone without overburning the top.

Red Centers in the Brick

Now let us consider what we may expect in color tone when the brick are set on edge and burned under these same conditions. If the faces of the brick are placed together in the kiln, we exclude the gases from the faces of the brick to a great extent, and the chemical reaction, or reduction of the ferric oxide to ferrous oxide, must begin on the sides of the brick which are exposed to the gases. Hence the result is brick with red centers and dark edges in the face. But these red centers will not all be the same size nor the same shape. This is not only because of the varying amount of reduction taking place in the different parts of the kiln, but also on account of the difference in shrinkage and unevenness of the faces, which will allow the gases to come in contact with the faces of the brick in varying degrees. I have observed that these red centers or spots always come in pairs; that is, the face of the brick which is face down and superimposed on the brick with the face up, will have the same size and shape of red centers as the brick on which it rests.

Setting on Edge Produces Streaked Brick

Now suppose all the brick are set on the edge but with faces down; where this reducing condition prevails you may expect at least half of the brick to be cross barred, that part of the face which is exposed to the carbon monoxide gas being dark, and that part of the face which rests on the next lower brick, shading from a brown to a small red center. These same colors appear in brick that are faced in the setting if the green brick have been hacked on the dryer cars in a condition soft enough to produce an unevenness in the face of the brick. This is especially noticeable in wire cut rough textures where the grinding is fine and the material plastic, because the indentation in the face of the brick is greater, and thus allows more of the gas to come in contact with that part of the face of the brick and its companion brick. The ends of the brick are likewise affected. It is also possible to get some all black brick, regardless of the manner in which they are set if the reduction is carried on long enough.

Ferrous Oxide Re-Oxidizes

Just as ferric oxide is easily reduced to ferrous oxide by elimination of one atom of oxygen, the ferrous oxide will re-oxidize; that is, it will take on another atom of oxygen when excess of oxygen is present during a chemical reaction. Hence, if after reduction has taken place in the kiln and you continue to burn, but under oxidizing conditions, allowing a larger amount of air to enter the fireboxes than is necessary for complete combustion of the gases, the brick will tend to resume their former red color. But this re-oxidizing apparently does not affect every brick in the kiln in the same manner, which, no doubt, is on account of certain lines of travel of the carbon dioxide gas and excess air, resulting from the sudden raising of the stack damper and open burning fires, necessary to produce an oxidizing condition in the kiln.

Producing Different Colors

I have observed that various colors may be produced in the face of the brick when set on edge, by alternating the conditions of the kiln toward the end of the burn; also, if we are desirous of maintaining the reduced condition of the iron, it is necessary for us to resort to rapid cooling. To do this, of course, we draw the fires, throw down the doors and open the vents. The more rapidly the brick are cooled, the deeper the fixed color we can get. Thus are the bronze, green and gunmetal brick produced. But if we cool the brick slowly without drawing the fires, just letting them burn out naturally, and not throwing down the doors, we can expect a large part of the brick in the kiln to be red in color. I have also found that it is possible to finish a kiln under reducing conditions several hours less than the time required under oxidizing conditions; but this gain is offset, in my judgment, by the stresses and strains to which the kiln is subjected in the rapid cooling of the brick necessary to maintain the reduction of the iron.

The Use of Lime in Burning

The foregoing remarks pertain to clays or shales where iron by itself is the principal coloring matter. Now, if we introduce lime, calcium oxide, in combination with the iron we get a different effect. This is especially the case where lime is combined or thoroly disseminated thruout the mass and not in the form of lime pebbles. Burning this combination under oxidizing conditions produces, as a rule, light red brick and under reducing conditions, a dark buff or yellow brick. Where a limy clay contains a large percentage of iron it is possible, under very strong reduction, to produce a brick having very decidedly greenish hue. However, limy clay generally produces light reds and buffs. If light reds are produced, the lime does not materially enter into combination with the iron, while in producing the dark buffs, yellows or greens, the lime combines with the iron when the ferric oxide is reduced to ferrous oxide.

Different Types of White Burning Clays

I have thus far confined myself largely to the color tones obtained from so-called red burning clays and shales, because most of you have these materials to deal with and are more interested in them. My own experience has been greatest with white burning clays and the combinations effected with them in mixture with red burning clays.

As previously stated, our white burning deposit contains five distinct strata. The clays may be listed as plastic fire or sagger clay, ball clay, semi-ball clay and bond clay. Altho the general color of most of these clays when burned is white or cream, there is a slight difference in the color of all except two of them. But when they are mixed in combination with our red burning clay, the difference becomes very apparent.

Care in Mixing Clays Essential

When in the past, we mixed these clays indiscriminately and set and burned them in a haphazard manner, the result obtained outranked Joseph's coat of many colors. The trouble was that no two kilns were the same and we were not able to standardize the color tone. We experienced the same feeling as "Rytt" when he was asked for representative samples and had to reply that it would take a carload. Since that time, however, we have been able to reproduce the same general color tone repeatedly and with certainty, altho the color range embraced 25 or more distinct shades. In order to do this, we had to adhere to one mixture composed of No. 2, No. 3 and No. 4 ball and semi-ball clays, which all burn white, and red burning clay in proportion of two to one.

Producing a Brown Brick

Our No. 1 is a plastic fire clay with a refractoriness of cone 30 to 31. This we use to manufacture fire brick. Our No. 5 is a bond clay which we ship mostly for use in the manufacture of abrasive wheels. In the face brick mixture just referred to, we found that we could produce a very beautiful brown color when the brick were set flat in the upper part of the kiln, burned under reducing conditions, and flashed at the end of the burn. But when this brick was set on the edge and burned under reducing conditions, the result was a very ugly color with no merit whatever. On the other hand, we found that the same brick set on edge but burned under oxidizing conditions would give us a light color tone of many shades, possessing much life and beauty; while if the brick were set flat and burned under oxidizing conditions, the result was a pale dead color.

Special Kiln for Light Brick

As our white burning clays are very refractory, requiring high heat to make a good brick even when mixed with red burning clay, our kiln fireman always produced in the kiln a reducing condition in varying degrees when raising the temperature to the finishing point. This situation forced us to design a kiln especially adapted to our needs in producing light brick. This design has made it possible for us to maintain an oxidizing condition in the kiln without sacrificing much of the heating value of the fuel.

Quality of First Importance

In closing, I want to leave this thought with you: No matter how beautiful the colors may be which we produce, we owe it to ourselves to give first consideration to quality, by producing the very best brick possible, so that it may stand as an everlasting monument to our industry.

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BUREAU OF MINES FINISHES REFRACTORIES MOTION PICTURE

"The Story of Fire Clay Refractories" is the title of an industrial motion picture film just issued by the Department of the Interior, Bureau of Mines. The film was prepared in co-operation with the Laclede-Christy Clay Products Co., St. Louis, Mo.

The film depicts the mining of the raw clay, both in underground mining and by steam-shovel stripping operations. The various processes used in mixing fire clay, in molding the clay by hand or machine, and in pressing the clay are shown in a series of graphic pictures. Laboratory methods for the examination of clays and fusion tests for determining their ability to withstand high temperatures are demonstrated. The actual burning of fire clay refractories in kilns in temperatures ranging up to 2,400 deg. F. is illustrated.

The widespread use of fire clay refractories in the industries is shown in a series of striking pictures. Interesting scenes showing the application of refractories in forge, malleable, and electric furnaces are represented. The numerous uses of fire clay refractories in various processes used in glass making and the making of glass products are depicted. The uses of refractories in cement kilns, enameling processes, the gas industry, the zinc industry, the automotive industry, in by-product coking, and in the construction of boiler settings are demonstrated.

Many of the scenes in this picture were taken in extremely hot atmospheres where it was necessary to use a specially-constructed, heat-resisting camera.

Copies of this film may be obtained by schools, churches, commercial organizations, and other public organizations or institutions by applying to the Department of the Interior, Bureau of Mines, Pittsburgh, Pa.

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ANOTHER PAVEMENT RESURFACED WITH BRICK

The July issue of the Dependable Highways, a publication of the National Paving Brick Manufacturers Association, calls attention to another place where a wornout pavement had been resurfaced with vitrified brick and asphalt filling. A country highway running between Ghent and Akron, Ohio, which was a six inch concrete pavement, constructed in 1912, was resurfaced with brick very much in the same manner as the Bettendorf pavement described in Brick and Clay Record several months ago.

Dependable Highways, commenting on this work, states: "Within the last few weeks work has been completed on the resurfacing, with vitrified brick and asphalt filler, of two worn pavements—one in Iowa and the other in Ohio. A description of the methods of procedure adopted by the engineers in charge is interesting and informative in view of the fact that need for such resurfacing, already noticeable, will increase as time goes on.

"The vitrified paving brick is a contribution to public economy by reason of its availability and utility in affording renewed life to worn pavements of all types. Quantity production in the highway field in the last few years finds us today with many miles of pavements which, without early attention, will become total losses before the bonds are retired. Proper preparation of the old surface, the application of a bedding course and a brick surface provides practically a new brick pavement with its typical 'long-life' and 'low-maintenance' at a comparatively small cost."

* * *

HOW A SOUTHERN PLANT BENEFITED BY NATIONAL RESEARCH WORK

Operators of numerous brick plants are putting into practical application the fuel-efficiency data obtained as the result of the series of burning tests at industrial kilns recently conducted by the laboratory car Holmes of the Department of the Interior, in cooperation with the heavy clay products associations, according to reports submitted to the Bureau of Mines by its field agents.

A notable example has been reported to the Bureau from Birmingham, Ala., in the case of an operator of two brick plants near that city who had been operating his kilns without especial regard to modern, efficient methods. This operator, being a member of certain clay products associations, receives thru these associations the results of improved methods of burning as developed by kiln-burning tests conducted under the direction of the Ceramic Experiment Station of the Bureau of Mines at Columbus, Ohio. Against the advice of the old practical burner and everyone else connected with the work, the superintendent at one of the plants decided to try out the method as outlined by the tests made by the Bureau of Mines. The results were more than satisfactory. At this plant it formerly took about nine days to burn a kiln with a consumption of over 1,400 pounds of coal per 1,000 brick. The company had contemplated building more kilns to take care of the demand. They now burn off the kiln in five to six days and use under 900 pounds of coal per 1,000 brick. Instead of building more kilns, some of the other kilns are now idle, while the plant still maintains its capacity.

Maintenance and Rebuilding of Round Down-Draft Kilns

How Rebuilding a Kiln Saved $800 in Fuel Consumption and Eight Days in Burning Time on Silica Brick

E. E. Ayars, Cr. E.

Chairman, Refractories Division, American Ceramic Society

ROUND DOWN DRAFT KILNS burning refractory brick receive hard service, and despite the usual repairs between burns gradually assume a more or less delapidated condition. Kilns being operated at cones 16 to 20, (2,642 deg. F. to 2,786 deg. F.) at top capacity show signs of age early as the amount of repair work done on the average plant is only sufficient to carry the kiln thru the next burn. Kiln repairs consume considerable time and if a kiln is laid up for repairs it is bound to reduce the capacity of the plant. As a matter of fact many kilns are beng operated in plants all over the country which on account of their condition are reducing plant capacity. Such kilns receive "a lick and a promise" between burns and retaliate with gradually increasing length of burn and spots of soft ware, until they reach a point where they are ready to fall to pieces and are replaced by new kilns.

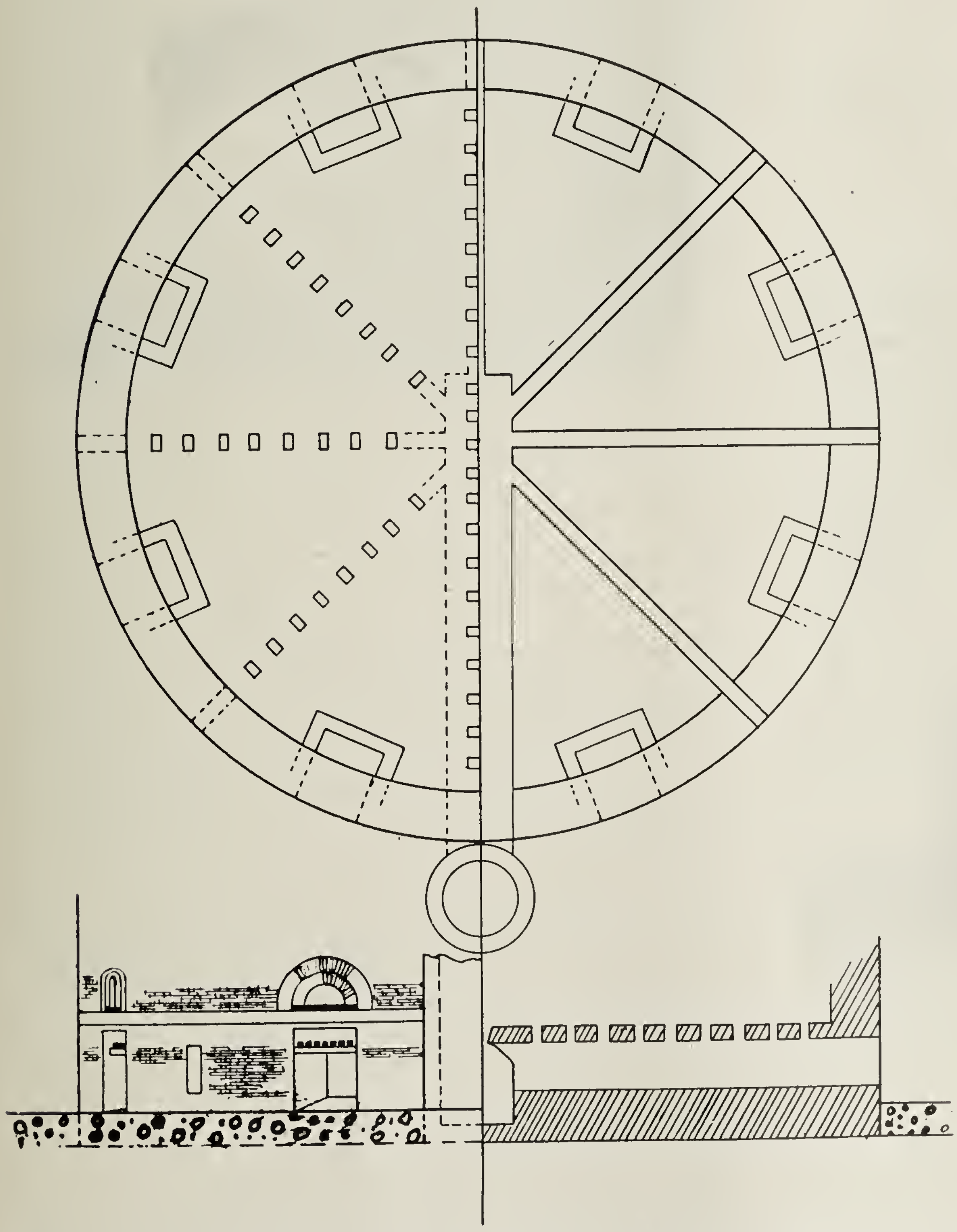

Fig. 1. Flue System and Floor Plan of Round Down-Draft Kiln Used for Burning Refractories at High Temperature. Note Method of Cutting Small Flues into Main Tunnel. Originally This Kiln Was "Well-Hole" Type Which Was Abandoned in Favor of a Continuous Main Flue

It Pays to Rebuild

It has been found by experience that it pays to take a kiln when it begins to actually show age and rebuild it thoroly thruout. A set of kilns ranging from seven to ten years service were operated at full capacity during the war and for about two years thereafter. The most extensive repairs consisted of an occasional new main flue and stack lining or a patch in a crown. The customary amount of replacements to fire boxes, arches and riddles between burns made up the majority of work done. To further compromise the service of the kilns, the bands which were a part of the original equipment were much too light to stand the continual strain and often broke as the kilns expanded under fire.

The broken band was usually secured with chains and drawn up as tight as possible with a turn-buckle. When the kiln was cool again a patch was riveted to the band but a tight job could not be secured. On the next burn the brick work filled out to the new position of the band ,thus gradually increasing the diameter of the kilns and opening up the brick work more or less. This permitted cold air to filter thru the walls. It is readily seen that continual service under such conditions would be likely to reduce the efficiency of the kilns and shorten the normal period of service very materially. Some of the kilns were pushed off the original foundation as much as twelve inches all around, increasing the diameter of the kilns about two feet at the botton. The amount of expansion at the skew back line was seldom enough to be noticeable altho some of the crowns did sag a little as a result of slight shifting of the skew back.

Pro and Con of Pit Kilns

The kilns in question are the thirty-two foot round down draft type of a standard construction, and being set below the surface of the yard are called "Pit Kilns". There are some disadvantages in a pit kiln and very few new kilns of this type are being constructed. The pits cut up the yard and consume valuable space. It requires more labor to handle fuel and ashes around such a kiln than on kilns set above the ground level. Pits are difficult to drain and during a storm water collects which hampers the workmen and runs into the ash pits.

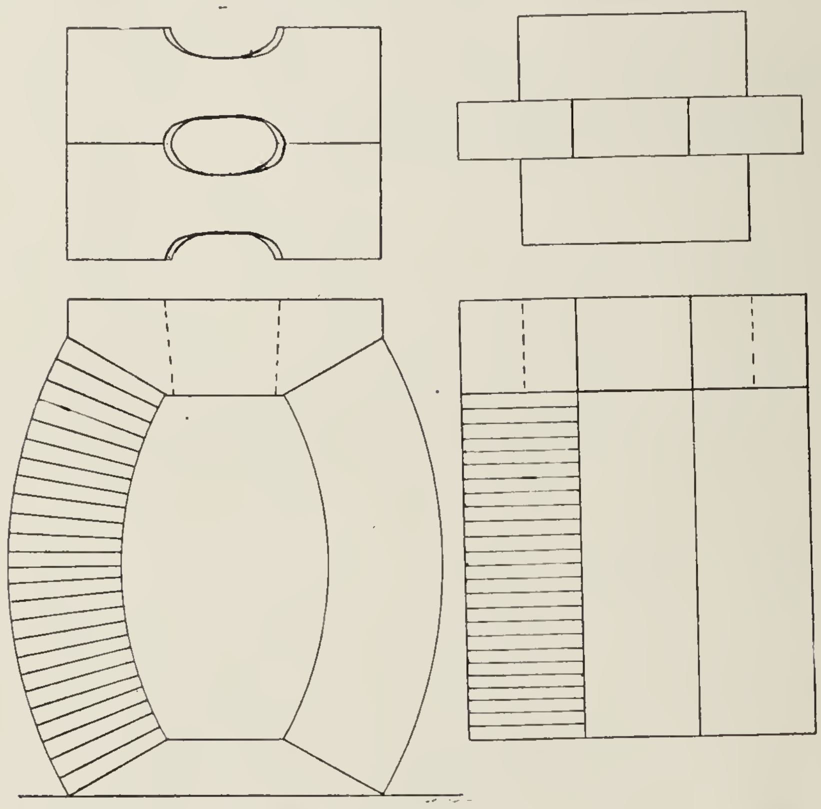

Fig. 2 (Left). Cross Section of Small Flue and Top View of Riddle Block. Original Design Abandoned on Account of Expensive Repairs in Favor of Plain Flue Shown at Right. (Right), Top View of Riddle Blocks Show Two 18-Inch Slabs Spaced by Placing Nine-Inch Straights Between Slabs. No Mortar Joints Used

The chief advantage of the pit kiln is found in slightly increased setting capacity as the fire boxes only extend beyond the face of the arch a distance of two feet, and lie entirely below the floor level. The small flues are more readily cleaned than those of the ordinary kiln as they open into the pit, and being visible at all times the flue doors are kept tight to prevent air leakage.

Description of Bottom

The kiln foundation is of concrete. The flue arrangement consists of a main tunnel, extending from the center well to the stack. Leading into the center well are seven small flues or riddles, provided with riddle holes in the kiln bottom. The main flue is also provided with riddle holes thus dividing the floor area into eight parts. This flue system has proven very satisfactory for high temperature work altho several changes in construction of the flues themselves have been effected which tend to facilitate repairs and increase the life of the kiln bottom. The main flue is approximately thirty-six inches wide and forty-eight inches high. As the center well is difficult and expensive to repair it was found much easier to eliminate it altogether and run the main tunnel just past the center of the kiln cutting the small flues directly into it. The time of making repairs was thus reduced and the service obtained equally satisfactory.

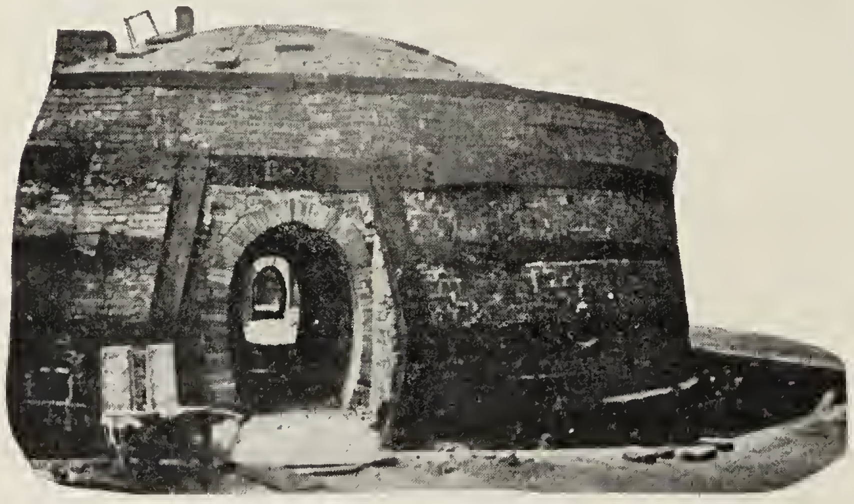

Fig. 3. Note Position of Door Frame with Respect to Door of This Badly Bulged Kiln. Two Patches Are on Top Band and Crown Shows Slight Sag as Result of Skew Line Shifting. Note Greater Diameter of Kiln at Floor Line and Loose Condition of Brick Work

The original tunnel was constructed entirely of fire clay brick which under hard service displayed more or less shrinkage and fusion. It was not uncommon to find a slag four to six inches deep in the bottom of the tunnel after a burn, the most of which consisted of fused fire brick and sand with some coal ash. The removal of this slag was quite a problem on account of its hardness and the cramped working quarters of the flue.

Why Breakage May Be High

Another undesirable feature of the fire brick tunnel is the uneven settling of the floor blocks making it almost impossible to repair one section of the tunnel and get a good level job. The new work will be considerably higher than the adjacent old work. It is difficult to get good setting on uneven kiln floors and high burning breakage can sometimes be traced to this fault.

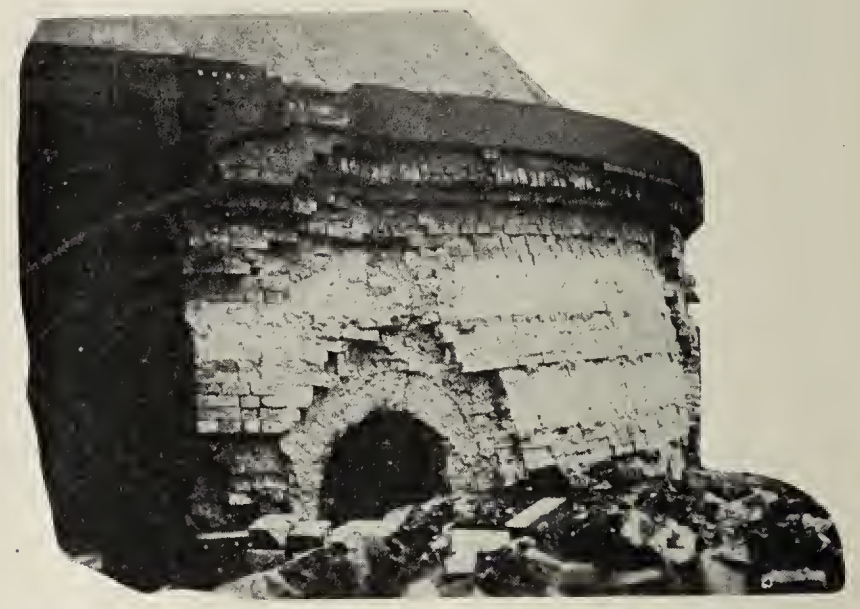

Fig. 4. Common Brick Has Been Stripped from Kiln in Readiness for Repair. Skew Band Is Still in Place to Support Crown

It was finally decided to construct the tunnel almost entirely of silica brick which were available. The walls were built with thirteen and one-half by six by three straights and the arch turned with thirteen and one-half inch wedge brick. Openings were left for the riddle holes in the arch. The top of the arch came to within four inches of the floor level allowing for the use of large flat silica floor blocks.

Silica Brick Floors

Silica brick for floors and flues have certain distinct advantages but there are many things to take into consideration to insure satisfactory results. Silica does not fuse at kiln temperatures and no slags are formed in the tunnels. The floor does not burn into a vitrified mass and it may be easily torn up for repairs. A clay brick floor softens under fire and the weight of the setting causes the bottom course of brick to sink into the floor. After the burn these brick are removed with a hammer leaving a rough floor surface. Sand used in setting accumulates on and burns into the floor also causing roughness. Neither of these undesirable effects are known in connection with a silica brick floor which remains level and intact thruout its life.

The principle undesirable features of silica brick for tunnels are their tendency to spall and the fact that they continue to expand slightly with every burn of the kiln. A new tunnel will spall more or less but this does not seriously effect its life and a well constructed main flue will last three or four years before requiring replacement. To take care of expansion lengthwise of the tunnel two two-inch planks are built into the wall on each side really dividing it into three sections. When the kiln is fired these planks burn out and the expanding brick take up the space. Under the kiln wall a space of six inches is left between the end of the tunnel and the stack throat to avoid damage to the stack. This space will gradually close up and after a few burns becomes entirely filled. No allowance is made for expansion of the arch except under the kiln wall proper where there is a space left between the flue arch and the relieving arch which gradually closes up.

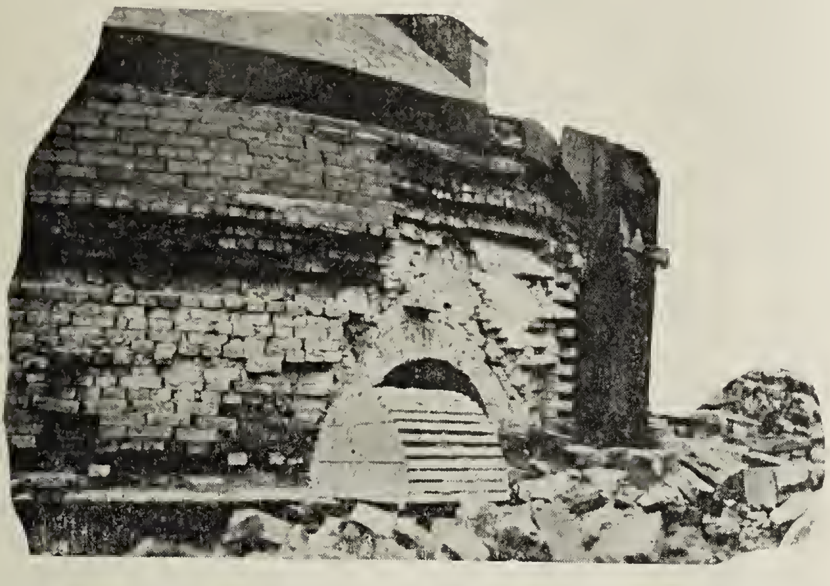

Fig. 5. New Door Frames and Bottom Band Placed. Note Position of Door Frame with Respect to Old Skew Back Band. New Wall Will Be Six to Ten Inches Thicker at Top than Old. In Foreground Is Seen a Form for Building Fire-Box Arches

The principal reason for the continued bulging of the kilns in question with each successive burn, was that proper allowance was not made for expansion of the silica floor and flues during the early use of silica brick for bottom repairs. The original kiln bands were of three-eighths and quarter inch steel and much too light for kilns of this size used for high temperature work, even tho no silica brick had been used in the kiln construction.

Changes Flue Construction

The original construction of the small flue or riddle called for a special skew floor block, the side walls being constructed of wedge brick, and the flue was wider at its midsection than at the top or bottom. The walls of these flues were later made of straight brick for greater ease in handling repairs. The special floor block was also abandoned and flat slabs used for the same reason, as it is almost impossible to fit new blocks to a used flue.

The small flues are nine inches wide and twenty-seven inches deep thruout their entire length, cutting into the main flue at the center of the kiln, and opening thru the outer wall into the pit for ease in cleaning.

A siliceous second quality firebrick is satisfactory for side walls of these small flues and silica slabs are used for floor blocks.

Expansion of the kiln floor while under fire causes a gradual restriction of cross section in the small flues and they require more or less frequent attention. The original construction was adopted with a view of getting longer life from these flues as the side walls presented the resistance of an arch to the pressure of the expanding floor. The clay floor blocks burned out frequently and the difficulty of making satisfactory repairs was so great that it seemed expedient to abandon the special construction.

What to Avoid

A common error in kiln floor construction is the tendency to fill the triangular spaces between flues with a mixture of broken fire brick, debris, and sand. This loose material is easily leveled and apparently makes a cheap job, yet is never satisfactory as the sand expands under heat and contributes to flue failure. When a flue is torn out for repairs, the loose sand and brick fills the tunnel and must be removed. It should be returned to its place after the repairs are effected.

This type of bottom as found in the kilns described was replaced in the following manner. All of the sand and loose brick were removed and brick bats placed in loosely up to within about eight inches of the floor level. A course of brick was then laid flat in an orderly fashion and made as nearly level as possible. The depressions were filled with fire clay and another loose course of brick laid flat. A coating of fire clay was then applied and carefully leveled after which the floor course of fire brick was laid. No clay joints were made. The use of this construction made it possible to tear out a flue for repairs without disturbing the adjacent floor and the damage to flues from floor expansion was greatly reduced.

The kiln walls were approximately thirty-one inches in thickness consisting of fifteen inches of first quality fire brick faced with common brick. No insulation was used. The doors were constructed entirely of first grade fire brick.

The fire boxes, eight in number, were set below the floor level, the permanent bag wall rising only three courses of brick above the floor. Flat grates of mild steel were supported on cast iron grate rests set thirty inches apart. The grates were forty-two inches long and the width of the fire box thirty inches.

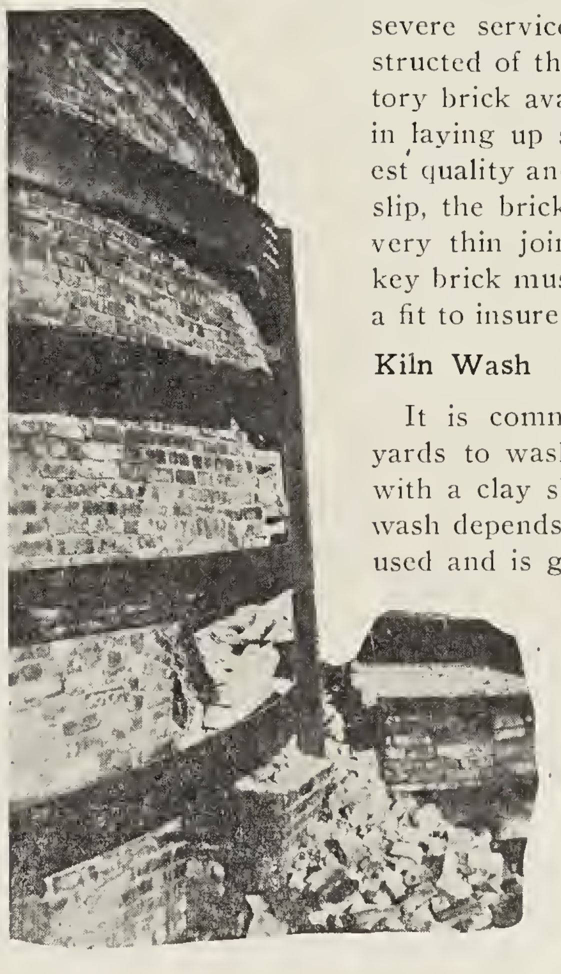

Fig. 6. View of the First Kiln Banded. This Method Was Unsatisfactory and Abandoned in Favor of a Complete Rebuilding of the Outer Wall and Application of Bands, One at a Time.

Fire box arches are subject to severe service and should be constructed of the best grade of refractory brick available. The clay used in laying up should be of the highest quality and used in the form of a slip, the brick being dipped, so that very thin joints are obtained. The key brick must be cut and driven to a fit to insure a satisfactory arch.

Kiln Wash

It is common practice in many yards to wash the interior of kilns with a clay slip. The value of this wash depends on the quality of clay used and is generally recommended provided a high grade clay is available, and no adulterants are added. High alumina clays containing fifty per cent. or more of alumina, are particularly valuable when used as washes and add materially to the life of arches and walls. By way of comparative test new arches were run, one being washed with high alumina clay, another with kiln repair clay of high quality, containing about twenty-eight per cent. of alumina, and the third arch unwashed. The unwashed arch failed after the usual service. The arch with the high alumina wash far outlived the second arch and several burns after the second arch had been replaced was still in good condition.

Kiln repair clays and washes should contain at least twenty-five per cent. of fire brick bats or calcine ground with the clay. A larger percentage of bats is desirable and should be used when they are available. Kiln repair clay is ground to pass a twenty mesh screen and washes should pass thirty mesh to be most satisfactory.

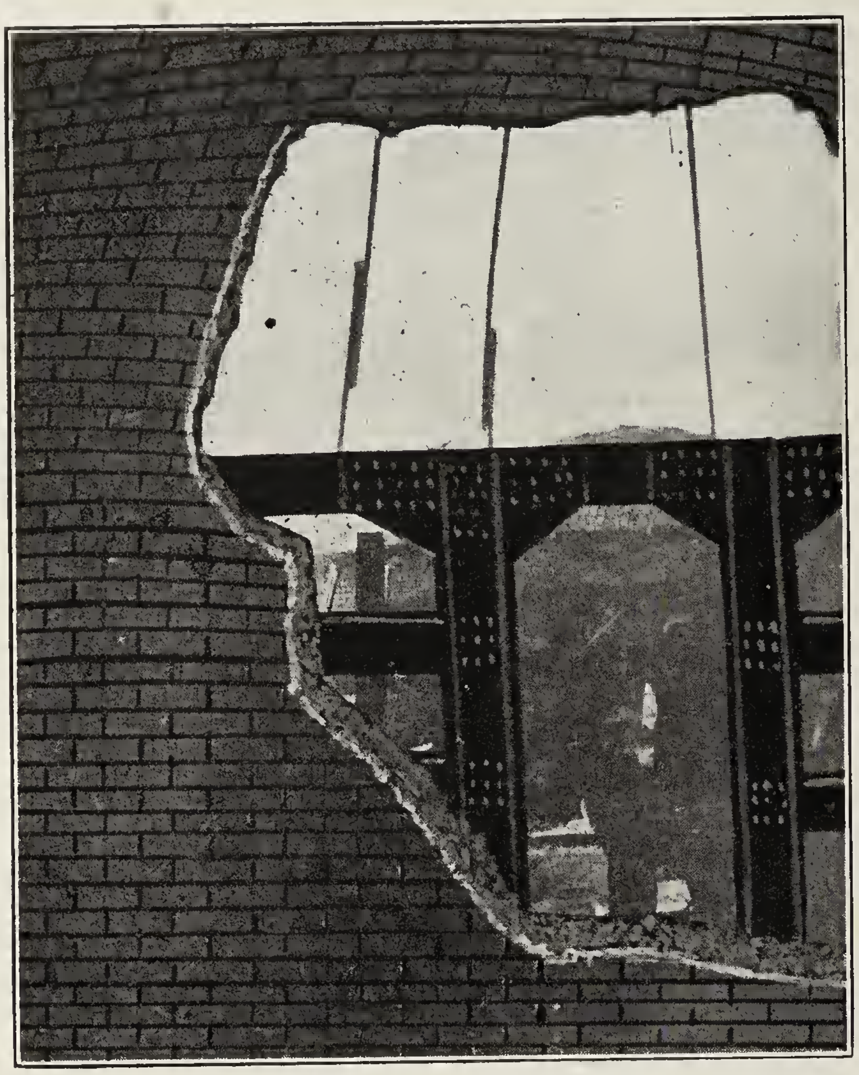

Fig. 7. View of Patch in Crown and Door Taken from Inside of Kiln. The New Bands Have Been Applied to Kiln and Repair Work Nearly Completed

How to Prolong Kiln Life

The life of a kiln arch may be prolonged by filling the cracks, opened by shrinkage, with grog to which a little clay is added for plasticity. The mixture being rammed in hard and struck off at the surface keeps the flame out of the arch. Such repairs to be most effective must be made between each burn, and should not be confined to kiln arches but may be profitably used wherever cracks appear in the kiln walls.

The crown used on this kiln is of a standard construction called the "D" type. This makes a very satisfactory crown altho it has a tendency to spall, especially near the base where the flame action is most severe. A kiln must be well banded to get the best service out of this type of crown as the slightest expansion at the skew ring increases the spalling tendency, particularly if the expansion occurs after the kiln has been in service some years and the crown has become set. The "D" type crown is easily repaired and large sections may be taken out if desired. No support is required altho a form is erected after the section is torn out to facilitate the placing of the new work.

For several years after the erection of the kilns described they were the fastest equipment burning silica brick in the United States, the best record for a satisfactory burn being four days and seventeen hours. The average burn was five to six days and the longest seldom more than seven days.

After years of hard service coupled with the abnormal expansion and bulging which the bands were unable to sustain, the kilns gradually grew less efficient until the average burn increased to ten days. Some of the best kilns were burning in eight days while others ran twelve and fourteen days.

It was decided to put on new bands heavy enough to prevent further expansion of the kilns. The plan was to tighten up the brick work by relaying some sections of the outer wall and pointing up the balance to exclude cold air. Accordingly the kilns were measured and the bands for each made to order. The skew back band and the one below it were twelve inches wide, the two lower bands being ten inches in width. The skew back band and the bottom band were of five-eighths inch steel while the two center bands were of one-half inch material. Fourteen inch channels were used for uprights in the door frames, a twelve inch channel formed the top plate and ten inch flat steel the bottom plate. The door frames were fabricated at the mill, and the bands fitted and rolled to the required diameter to facilitate the work in the field. A short section was furnished with each band to allow for fitting on the job.

Undertook a Difficult Task

There seemed to be no information available on the rebanding of kilns. No one had tackled such a job on a wholesale scale before so the first kiln banded served as a school. To make sure that no very expensive accidents occurred the poorest kiln on the yard was chosen and the crown carefully braced from the inside. The old bands and door frames were then cut off with an acetylene torch in such a manner as to leave the skew back band intact. The doors were then squared up, the new frames erected, and the bands fitted and riveted in place. The common brick work was so loose that it was difficult to find a patch that really did not require tearing out. The steel was heavy and fitted the old brick-work so clumsily that it appeared to be cheaper to rebuild the whole exterior of the kiln to fit the bands rather than to attempt to heat and bend the bands to all the irregularities of the brick-work. This plan was further justified by the fact that it would give a tight wall and a very much better looking job.

How the Work Was Done

After bracing the crown and cutting the bands from the second kiln the loose exterior brick work was all stripped off and built up from the ground to the level of the bottom band. The doors were rebuilt, the new frames placed and the bottom band fitted and riveted. The brick work was then carried up to the second band and it was fitted, as was also the third band in its turn. When the brick-work had been carried up to the bottom of the skew back band the old band was cut off and the new one placed. The brick work was then carried to the required height and the top band, which was three-eighths inch steel six inches wide, was fitted.

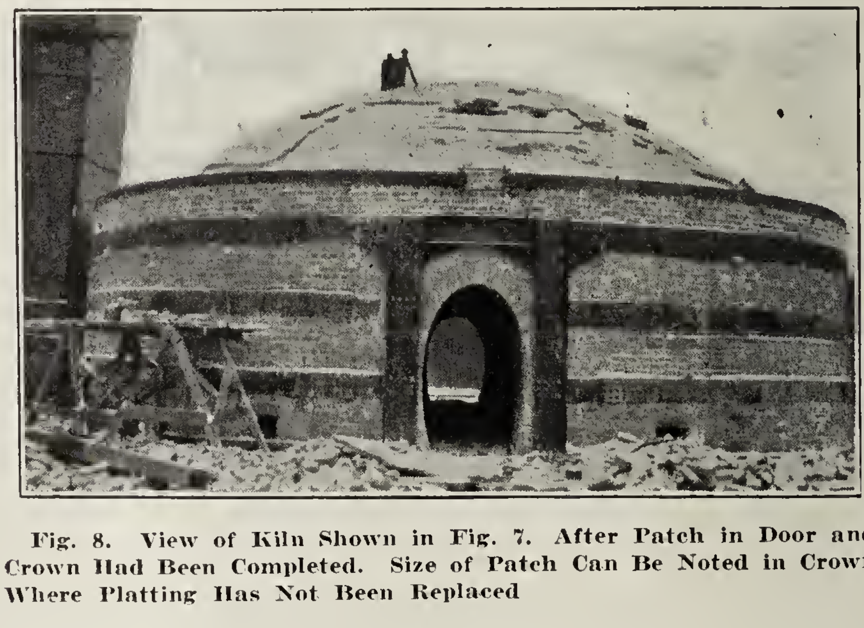

Fig. 8. View of Kiln Shown in Fig. 7. After Patch in Door and Crown Had Been Completed. Size of Patch Can Be Noted in Crown Where Platting Has Not Been Replaced

One of the features of these kilns is the fact that the outside wall is carried about two feet higher than the skew back. The space between the wall and the crown is filled with old fire brick bats laid in loosely and the crown platting laid over it. This provides insulation of a sort for the lower three feet of the crown and without doubt is of considerable value. Two crowns were replaced some years ago and this feature left off and it made a marked difference in the burning time and handling of the kilns.

Kiln Rebuilt

While the work of rebuilding the exterior of the kilns was in progress, new arches, fire boxes, sections of wall and crown, flues and new floor were being put in where occasion demanded. A complete new flue system and floor was put in one kiln and the base of the stack relined. Extensive repairs were also made to the sidewalls and fire box arches.

The crown platting on all of the kilns was in poor condition and required replacing. The old brick were removed and the crown covered to the depth of one inch with crushed fire brick bats ground to pass a three-eighths mesh screen and containing all the fines.

This layer of material may have a slight insulating value but the principle reason for placing it was to provide some means of adjustment between the platting and the crown. Platting applied directly to a crown is subject to more strain from expansion and contraction than it can withstand and soon breaks up.

On relaying the brick lime-cement mortar was used and care exercised to have all joints well filled and struck off smooth. At the base of the crown a wash of lime-cement mortar was applied to the platting to make it as nearly waterproof as possible.

Repairs Paid Quickly

When the rebuilding was completed the kilns had every appearance of being new on the exterior and were just as good as new on the interior. One of the first kilns completed burned an excellent kiln of brick in six days where it had taken fourteen days to burn it off just before it was rebanded. The daily coal consumption of these kilns after they are six days' old averages about twenty tons and at five dollars per ton this makes the fuel cost one hundred dollars a day. The first burn after reconditioning saved from seven to eight hundred dollars. The total cost of rebuilding the kiln was a little more than two thousand dollars which was paid for by coal saved in three burns to say nothing of the time saving feature as related to plant capacity.

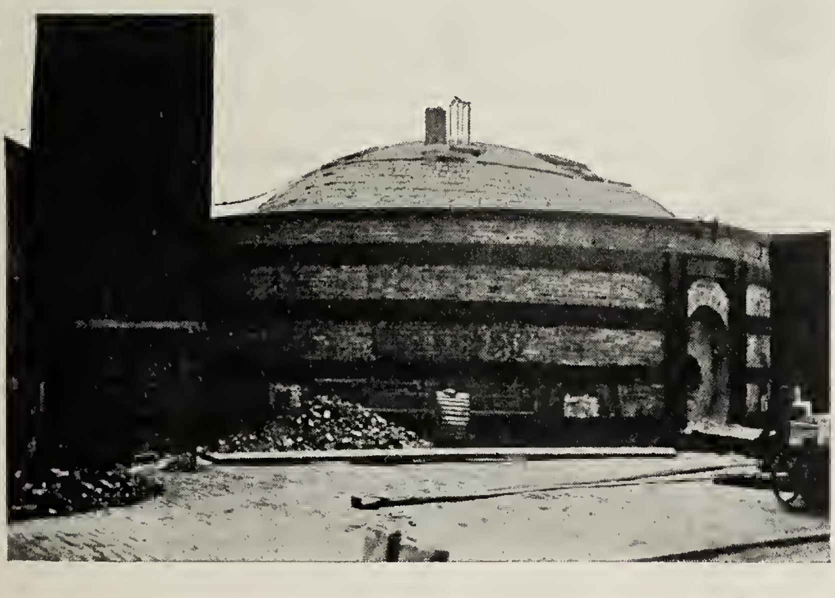

Fig. 9. Another Completed Kiln. Note the Regular Appearance of the Brick Work and New Crown Platting

It is highly important to provide proper bands for every kiln and the harder the service the heavier the bands should be. Liberal allowance for strength should be made in the door frames. In the case of the kilns described the original door frames were much too light and pulled out of shape badly even before the bands began to break. Some kiln builders provide turnbuckles for use across the door while the kiln is under fire. This is to be recommended in case door frames already in use are not strong enough but in erecting new kilns it is generally more satisfactory to provide the additonal strength in the frame itself.

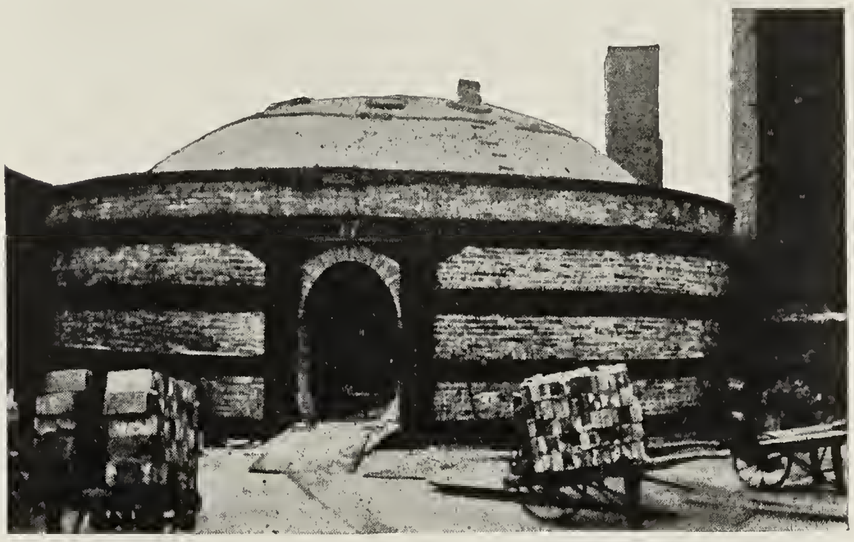

Fig. 10. This Kiln Was Burned in Six Days After Being Rebuilt. As Far as Outward Appearance and Results Are Concerned It Is a New Kiln

Summing Up

A solid floor and flue system of silica brick is not recommended on account of the difficulty of handling the expansion, but a combination of fire clay and silica brick such as described is much easier to keep in repair and generally more satisfactory than a solid clay brick floor.

The use of clay washes and grog mixtures in arch and wall repair is strongly urged if high quality materials are used and adulterants intended to cause fusion or glazing are not added. One of the reasons for the success of high alumina washes is the fact that they do not glaze readily and retard the vitrification and subsequent spalling of brick to which they are applied.

When kilns show decided signs of wear it is advisable to make thoro repairs instead of attempting to patch them up to get another burn out of them. Apparently such kilns are just keeping abreast of the plant capacity, but in reality the time of turnover is enough longer and the coal consumption enough higher than normal to be hurting plant capacity. Time taken out for repairs is easily made up once the kilns are in proper condition.

⁂

TWELVE HOUR DAY TO BE CUT

Elimination of the 12 hour day in the steel industry will begin immediately and wages of employes whose hours are reduced from 12 to 8 will be so adjusted as to afford earnings equivalent to a 25 per cent. increase in hourly and base rates, directors of the American Iron & Steel Institute decided August 2.

It is estimated that the shorter working day will necessitate the employment of between 60,000 and 65,000 additional laborers and will add approximately $45,000,000 to the annual pay roll of the industry.

⁂

BRICKLAYERS' SCHOOL IN OKLAHOMA

Oklahoma City, Okla., is falling in line with the general movement to train more bricklayers by means of apprentice schools. An open shop training school will be established September 1, it is expected, with a prospective class of 14 apprentices. It is hoped that capable bricklayers will be graduated after a period of nine months.

FINE CERAMIC MANUFACTURE

A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

CORRELATE PLANT, LABORATORY

SCIENTIFIC MANAGEMENT has proven its worth in the Detroit plant of the Champion Porcelain Co. Every factory operation has its duplicate in the research laboratory of this company that manufactures spark plugs exclusively. Each carload of incoming raw material is carefully analyzed and thoroly tested before it is placed on a plant production basis.

Complete Laboratory Tests Made

Separate laboratory tests are made on each body and glaze batch both before and after firing and the results plotted against each other. Under the careful guidance and judicious application of a painstaking scientific staff it is surprising to see how closely these results coincide.

Routine work in the laboratory consists of sampling the shipment, preparing the sample and sending the body on its way thru the various processes developed in the laboratory. To insure that no person may tamper with a mix, it is kept in an iron can under lock and key. Enough batch is kept in each can to insure a duplicate should the first batch unfortunately meet with an accident.

Laboratory and Factory Practice Correlated

All the material used is mined in this country. The body is pugged three times, once before an aging of several days and twice afterward. This process increases the plasticity and strength of the clays used. The small laboratory pugger is at present being calibrated against one of larger capacity, this effort being made in order to correlate actual conditions between laboratory and factory. After being aged for a week the body is sent thru a plunger and the resulting cylindrical column is cut to required lengths after which the blanks are placed in on boards for an air drying of 24 hours and a second drying in a steam dryer. The blanks are now ready for squaring. This squaring is done on machines designed and built at the plant that cut the plug to the required length and fashions the design. All slugs are thrown on wheels, and the hole thru the center drilled by hand.

Natural Sillimanite Used

Painstaking investigating and tireless prospecting by Dr. J. A. Jeffrey expert mining engineer, and official of the Champion Co., brought to light a natural deposit of sillimanite, a mineral admirably adapted to the requirements of a spark plug. Iron pyrites sometimes occur in this deposit in large quantities and when the material arrives at the plant it is carefully sorted and the objectionable pyrites discarded. Blanks of each mix are made in the laboratory, glazed and placed in saggers, with the regular run of spark plugs. Each car has a set of sample plugs and each sagger has a plug with product and batch number. After firing they can be recognized due to the blue tips and identification numbers denoting the batch number and date. These test plugs are taken to the research laboratory and are subjected to a series of rigid tests.

Plugs Undergo Rigid Tests

These tests include resistance to mechanical shock, sudden heating and cooling, a dialectric strength test in an electric furnace and a service test on a motor.

For resistance to sudden heating and cooling a machine upon which the plugs are placed enables a plug to remain in the flame of a bunsen burner for 30 seconds and the same amount of time for cooling—only the tip is placed in the flame. This process is continued for 24 hours and the failures are noted as they occur. Another test is that where the plug is placed in an electric furnace and subjected to electrical shock at an increasing rate of temperature.

All Results Charted

Curves of these tests are drawn representing the story of each plug. This record is kept up and results are tabulated daily, colored inks being used to identify the different bodies and corresponding tests. In making the various thermal tests different pyrometers are used each being especially adapted for its specific mission. Thermal conductivity is measured with a high tension precision instrument. Tensile strength is measured on an Olsen machine of special design.

General View of Process Laboratory Where Bodies Can Be Put Into Production Without Interfering With Factory Operations

Raw Materials Tested

It is also very necessary to run fusion tests on the raw materials and these tests are run in a small pot furance, using preheated air. It was said that the fusion furnace would go to cone 36 without any trouble.

Fired at High Temperature in Tunnel Kiln

To produce a first class spark plug the necessary amount of fire must be given the body and in order to obtain this terrific temperature, special refractories were necessary.

Every type of refractory was tried out with the result that saggers and kiln linings in the hottest zone of the Dressler kiln are made of silicon carbide refractories. There is a difference in the forms of this type of refractory. Some forms blister after few burns while others do not. The refractories for furnace linings are obtained from the Exolon Co. while a special grade is obtained from the Norton Co. for making saggers. These saggers go thru burn after burn at a temperature equal to cone 19. The carborundum saggers while blistering after several burns have tremendous tensile strength, a most necessary attribute for saggers used in burning spark plugs.

Another interesting departure in the laboratory is the manufacture of pure sillimanite pyrometer tubes. The tubes are cast and fired to cone 32 in a specially constructed furnace. The burn is completed in from 16 to 21 hours, depending upon the gas pressure. The resultant tubes are able to hold a vacuum and are impervious to gases.

Another interesting feature of this laboratory is the control room wherein is located a duplicate recorder board that charts the trail of the plugs thru the kiln. On this board are found seven Bristol pressure gauges, measuring cooling water at the outlet temperature cooling water at the outside pressure, gas pressure, gas pressure at booster, gas pressure at kiln, cooling fan vacuum and exhaust fan vacuum. All gauges and pyrometers are checked daily. It may be stated here that both Brown and Bristol pyrometers and Leeds & Northrup potentiometers are used thruout the plant. Taken altogether, this laboratory with its complete equipment for chemical, electrical, mechanical, physical and practical analysis of raw materials and finished product is with its efficient machine shop, one of the best if not the best equipped ceramic laboratory in the world. It is expected that in the future all optical instruments used at the plant will be made in the machine shop of the research laboratory that is under the direction of Frank H. Riddle.

* * *

ADOPT U. S. CHINA WARE STANDARDS

Three standard sets of white china ware for Government use have been agreed upon by vitrified china ware manufacturers and the Committee on China and Glassware of the Federal Specifications Boards. The sets adopted are: One-half thick china ware for enlisted men's dining service for use in the army, navy and marine corps; vitrified hotel china ware for all government dining room service and hospital service where desired; and one-quarter thick vitrified china ware for hospital service. Drawings of the different articles now are being made so that each purchasing department of the government and the manufacturers can be supplied with a set of blue prints. The standard sets were adopted at a meeting July 10 at which the following were present: F. Sutterson, Maddock Pottery Co.; W. L. Huber, Onandaga Pottery Co.; L. H. Brown, Buffalo Pottery Co.; A. L. Goulding, Warwick China Co.; C. W. Read, Shenango Pottery Co.; J. A. Egleston, Emergency Fleet Corporation; G. A. Bentley, Army Quartermaster Corps; R. D. Kinsey, U. S. Public Health Service; B. Puryear, U. S. Marine Corps, and A. E. Williams, R. F. Geller and F. Hazlewood of the Bureau of Standards.

* * *

SHENANGO TO BUILD MORE KILNS

At a recent meeting the stockholders of the Shenango Pottery Co., Pittsburgh, Pa., voted to increase the capital stock of the company from $250,000 to $750,000. The company's 13 kilns are now in operation and present plans call for a further increase in production. A number of new kilns will be constructed, it is said.

N. E. LOOMIS DIES SUDDENLY

N. E. Loomis, general manager of the Mosaic Tile Co. of Zanesville, Ohio, and formerly of East Liverpool, Ohio, died suddenly at his home in Zanesville. He was stricken presumably with heart disease while working in a little garden at his home. Mr. Loomis was widely known as a ceramic man of considerable ability.

* * *

POTTERIES EXHIBIT AT FAIR

At the National Merchandise Fair, which opened at Grand Central Palace, New York, July 23, and to which only buyers are admitted, the ceramic industry was represented by attractive exhibits of the Zane Pottery, South Zanesville, Ohio, and the Fulper Pottery, Flemington, N. J., both of which showed displays of vases and kindred art ware.

* * *

CAROLINA POTTERY STARTS OPERATIONS

The new pottery plant at Matthews, N. C., has on display at the local chamber of commerce specimens of their first output. The plant commenced operations only a few months ago and in the very near future expects to turn out 2,000 gallons of pottery, flower pots, churns, chicken troughs and other wares produced from clay. J. W. Outen is head of the plant.

* * *

POTTERY PLANT TO INSTALL NEW UNIT

Monroe Miller, who operates a pottery manufacturing plant at Romulus, Ala., has awarded a contract for the construction of an additional unit that will serve to approximately double the present capacity of the plant, and will include considerable new machinery.

* * *

POTTERY INCREASING CAPACITY

The pottery plant owned by Monroe Miller, near Tuscaloosa, Ala., will be doubled in capacity. The contract has already been let for the new addition to the plant to T. F. Deese. A large part of the output of this plant is sold to Birmingham dealers.

* * *

LACK OF LABOR SHUTS FELDSPAR QUARRY

The River Feldspar & Milling Co., Middletown, Conn., has curtailed operations at its plant at Maromas, near Middletown, owing to the difficulty in securing labor, and it is likely that the works will be closed until the situation is improved. William Mack, vice-president, says that it is next to impossible to obtain laborers to dig the feldspar, or to secure skilled men to work in other departments of the plant. The company operates its own grinding plant, and this also will close down temporarily.

* * *

INSTALL NEW EQUIPMENT IN POTTERY

Considerable improvements are being made at the Southern Potteries, of Erwin, Tenn., which includes the building of two new kilns, a new sagger machine and an unloading machine to unload coal at the rate of one car in 1½ hours. The new installations will cost approximately $15,000. It is anticipated that the new equipment will increase their capacity about $175,000 a year and give them an output of about $600,000 annually. Thru the efforts of their manager, G. R. Brandt, the plant is kept running almost twice that of its previous output.

* * *

TO ERECT NEW BUILDING

The Van Pottery Co., Trenton, N. J., has filed plans for the erection of a new one-story building on Parker avenue, to be used for general operating service.

LEADERSHIP Belongs ON

International Clay Machinery Co. has
clay machinery by CONTINUAL AD

Success—in a dry pan, a pug mill, a
goes into your plant depends upon:

Price—Does it bring a return commens

Production—Does it produce Quality O

Cost of Operation—Is it designed alo
sumption, minimum repair costs, a

Long Life—Has it the ability to withsta
and year out?

Economy of Labor—Can it be handle
will it require?

Engineering design and construction,
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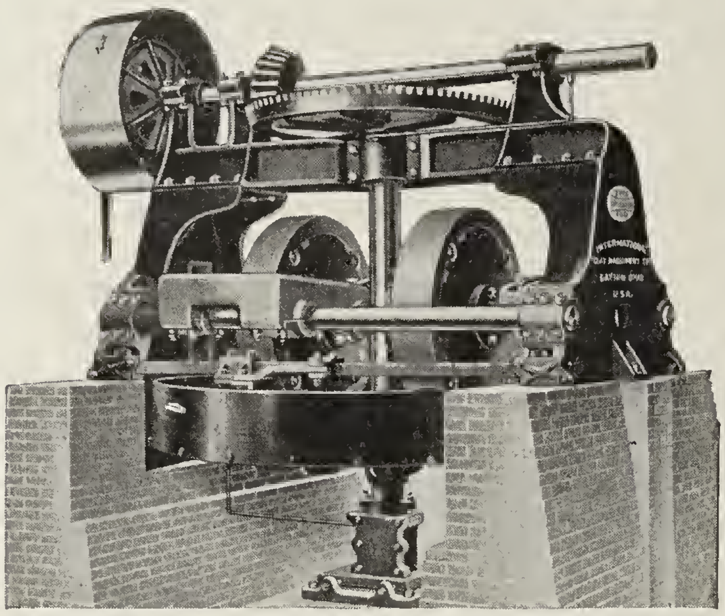
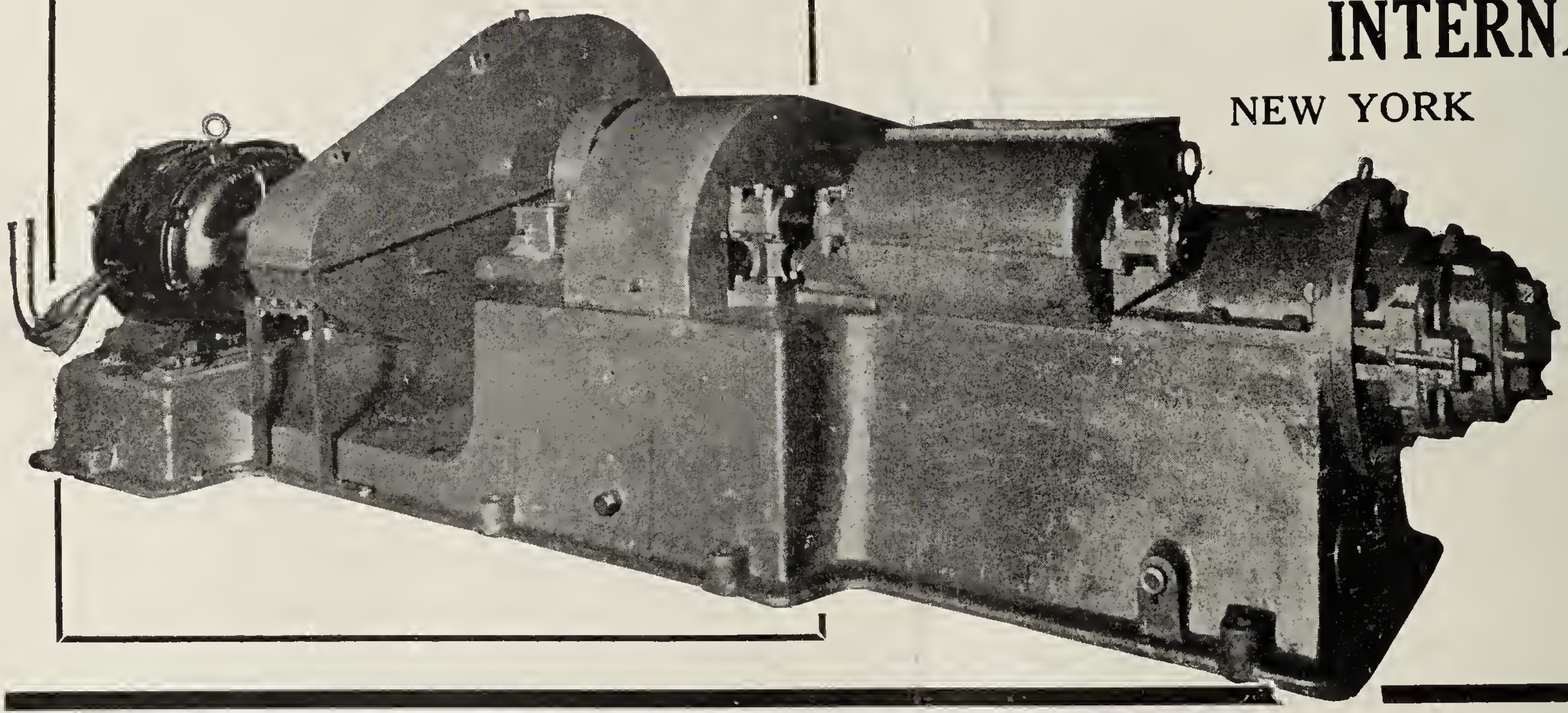


Dry and Wet Pans

Auger Machines



ENGINEERS
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of
COMPLETE
CLAY PRODUCTS
PLANTS

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MACHINERY CO.

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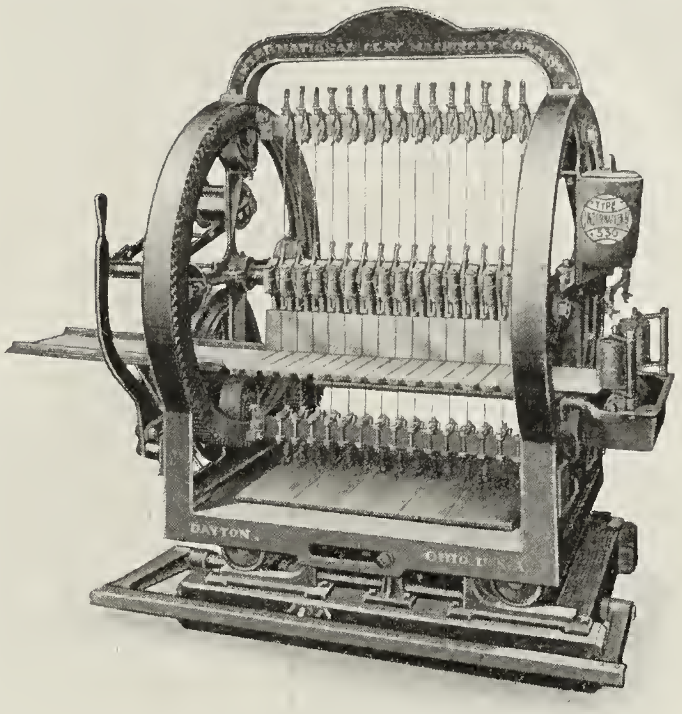
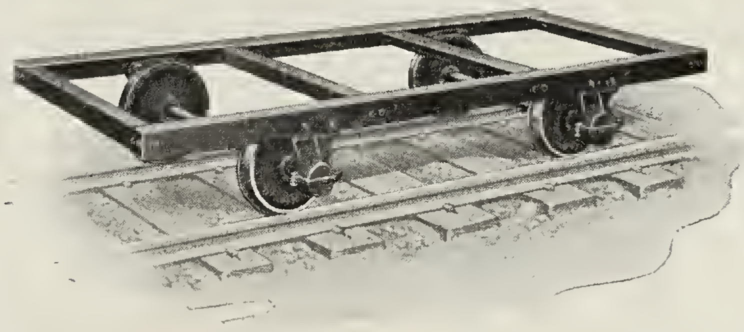
Mr. Plant Manager — Is your present equipment a success, when considered in the light of the five principles outlined above? If you are doubtful, INTERNATIONAL Engineers will help you solve your problems.



Cutting Tables



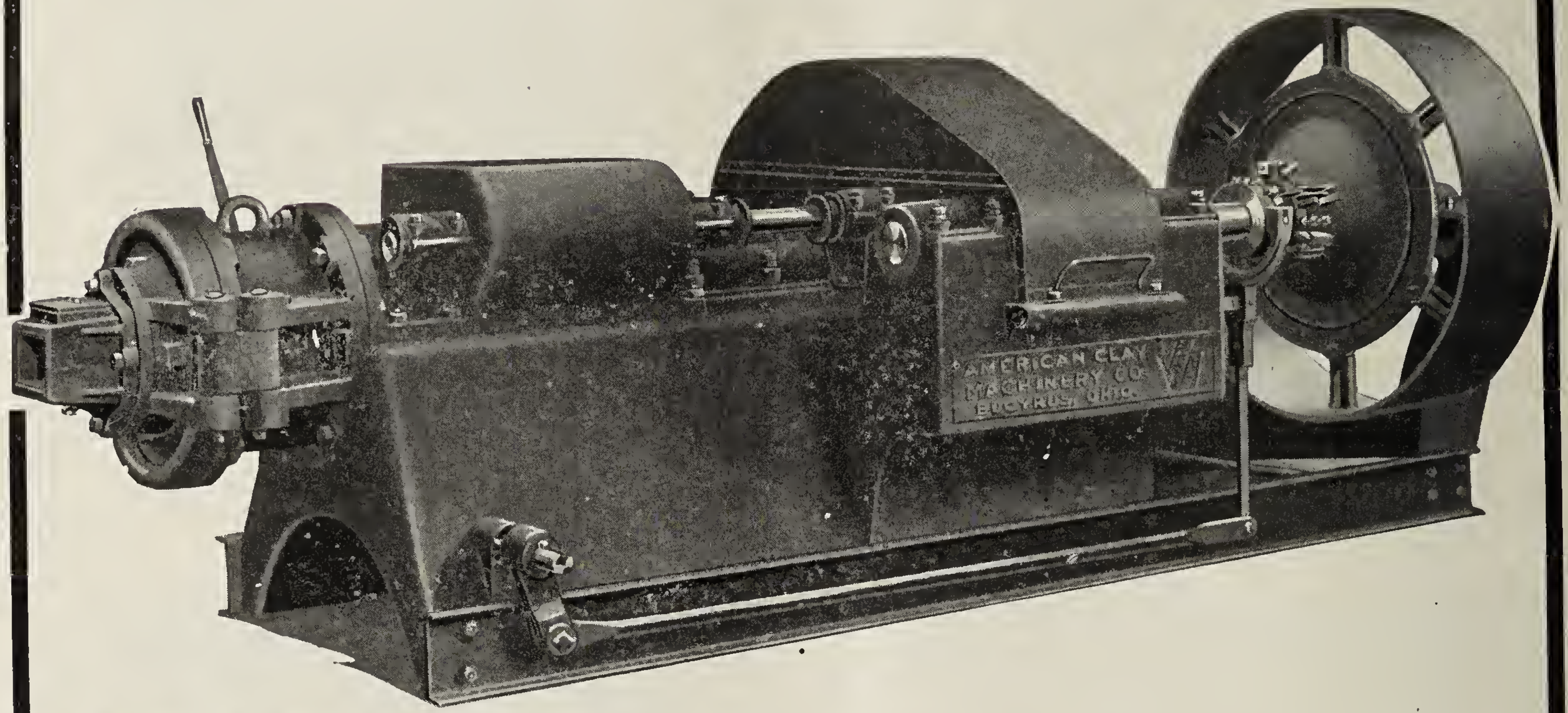
Dryer Cars

Tunnel Kiln Cars

EQUIPMENT *for* MANUFACTURING CLAY PRODUCTS—POTTERY *and* GENERAL WARE

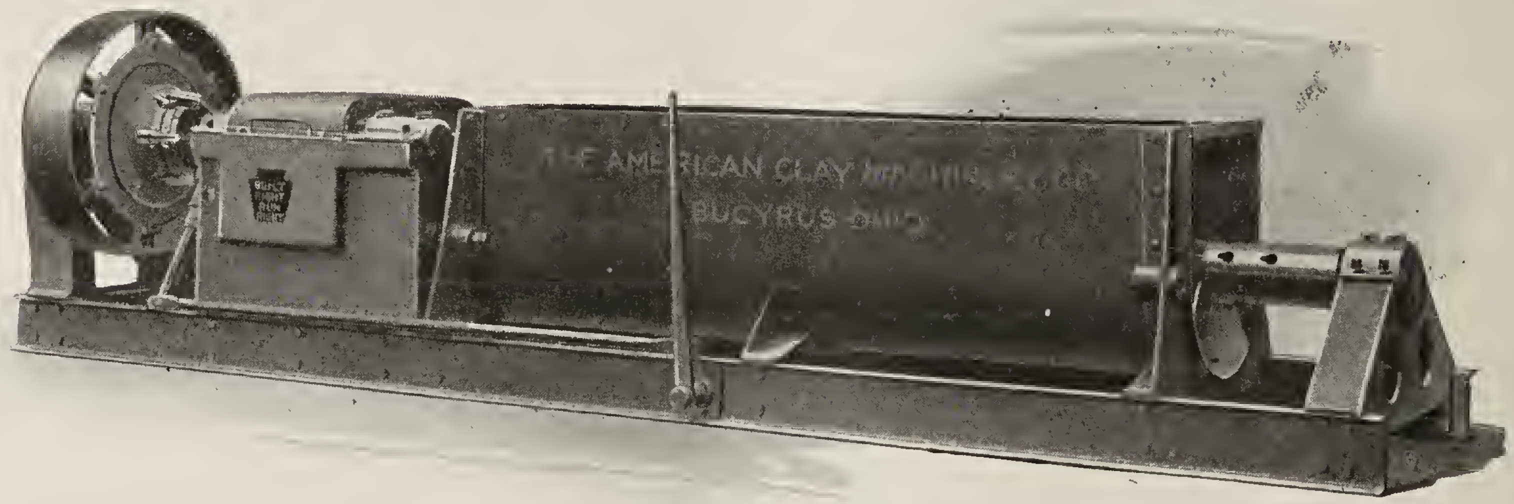
290

Four American No. 290 Auger Machines were among other "Americans" put in the Bradford, Pa., Brick Co. Plant. One machine was an extra to use when one of the others went wrong. After some years they decided to sell the extra 290. The three others refused to go wrong. Quality in the 290 keeps it going satisfactorily.



302

Among other American Machines in the Los Angeles Pressed Brick Co. plant was a 302 American Pug Mill. Superintendent Cake said of this machine—"we are very much pleased with the high class of work performed by the American Line of Machinery as well as the simplicity of its mechanism."—Quality built in to American Machines shows in their operation.



THE HADFIELD-PENFIELD CO., Bucyrus, Ohio

Builders of the American Line

The Ohio State Journal.
ONE HUNDRED AND TENTH YEAR. NO. 84.
COLUMBUS, OHIO, WEDNESDAY MORNING, MARCH 24, 1920.
PRICE TWO CENTS
Weather
An interesting advertisement never lacks readers.
The Buying Power Looks to The State Journal
The State Journal Reaches the Buying Power
WILSON LIFTS CONTROL OVER PRICE OF COAL
Advises Operators and Miners to Fix Up the Scale; Warns Against Profiteers
Dayton Girl Voted Prettiest at Miami
Wood Leads in South Dakota; Lowden Second
Touted As the New German Chancellor
RIOTING SURE IF RISING RENT IS NOT HALTED
Renters in Gotham Carry Their Fight to Members of the Assembly
Suffrage Fails in Delaware, Is the Forecast
HARDING MUST FIGHT IN HAMILTON COUNTY
CITY ELECTION TOO HIGH
Democratic Leaders Have Conference With Governor
LOWDEN TO BE FIRST IN NOMINATING LISTS
Miners' Strike Seems Imminent
Williams Is Confirmed
HAIGH KILN
PLANT OF
THE SHALE BRICK COMPANY
COLUMBUS OHIO
SIDE FIRING A HAIGH KILN
TOP FIRING A HAIGH KILN
SETTING BRICK IN HAIGH KILN
REMOVING BURNED BRICK FROM HAIGH KILN

Ohio's Capital

The Capital of Ohio—Columbus—is the home of the Shale Brick Co. and they made the brick for the Ohio State Journal Bldg. No culls, all first class, because they were burned in a Haigh Continuous Kiln.

Ohio is also the home of the following Clay Plants which use and recommend the Haigh Kiln:

Ohio Paving Brick Co., **Toledo**	**Erie B. & C. Products Co.,** **Sandusky**	**Peebles Paving Brick Co.,** **Portsmouth**
Consolidated Brick Co., **Corning**	**Metropolitan P. B. Co.,** **Youngstown**	**Shale Brick Co.,** **Columbus**

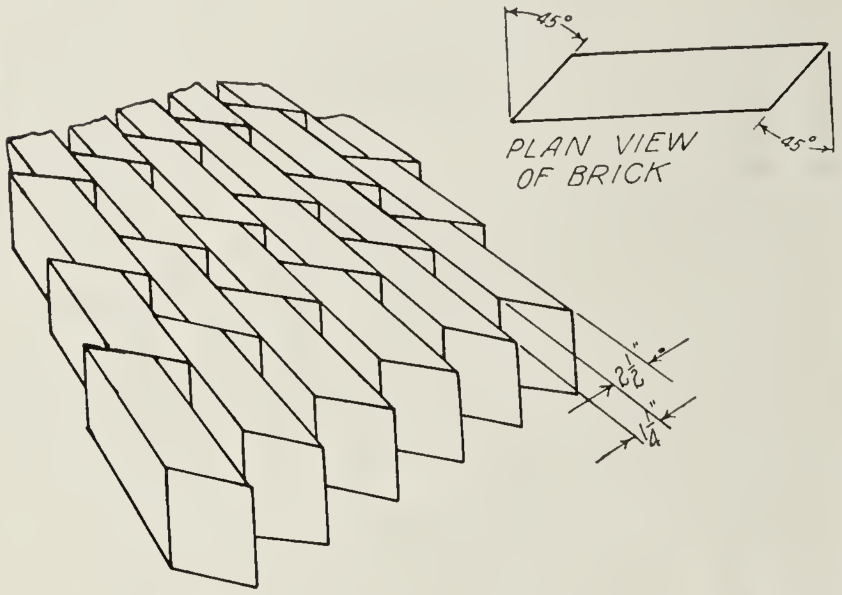
Ask any or all of these for their opinion of The Haigh Kiln. Can you afford to continue burning twice the fuel you need?

THE
Hadfield-Penfield Steel Co.
Bucyrus, Ohio

Management and Superintendence

BETTER TYPE OF RIDDLE BRICK

The accompanying drawing shows a sketch of a new type of kiln floor brick known as the riddle brick. These brick



Sketch Showing a New Type of Kiln Floor Brick

are approximately 2½ inches in width and each end is cut off on a 45 deg. angle instead of on a right angle. They are set in the floor of the kiln as shown in the drawing. M Jarboe believes that this is a much stronger brick than ordinary type of riddle brick. Furthermore, it is easy make, the only difference being in the cutting. Mr. Jarb says:

"Another advantage of this brick is that less brick will be required to cover a kiln floor than with the ordinary riddle brick. Three of these brick will cover a square foot of space if they are made a foot in length while some of the old types require 4½ or even 5 brick to the square foot.

"If these floor brick are machine made they should be run from the machine endwise because they are stronge and will hold more weight. Side cut brick are not suitabl for use as riddle brick."

"When these brick are put in the kiln they cannot turn over and should one become broken it can easily be replaced. To cut the 45 deg. ends it is necessary to make a wooden trough which has its ends shaped to the correct angle. The ends are cut off by wire. To facilitate cutting, the trough should be fastened to a wheel on a table so that it can be revolved. After one end has been cut off the wheel is turned bringing the other end in position so that it can be cut off handily.

* * *

PORTABLE FAN COOLS KILNS

The attached illustration shows a fan mounted on a small portable truck for cooling kilns at the Adel (Ia.) Clay Products Co. This fan is driven by a five h.p. motor and delivers 18,000 cu. ft. of air per minute. It is used to force cool air into the wicket or kiln door opposite to the one from which the kiln will be emptied or is being emptied. This assists the gang that empties the kilns considerably. It is an idea that has been described in Brick and Clay Record before and is gaining more and more favor.

Another Kiln Cooling Fan the Advantages of Which Have Often Been Described in Brick and Clay Record Before

The Dawn of a Better Day in Brick Burning

When Smokeless Oil Burners were first offered to the Clay Industry they naturally met with many preconceived notions and prejudices.

They were a new thing to the trade and subject to all the suspicion and criticism that a new idea excites.

They made their way by test after test in comparison with other burners already established in the industry and they won because of their absolute superiority.

SUPERIOR RESULTS — less fuel, less labor, shorter burning time, less damage to the arches and brick work, better burned brick—These are the reasons why Smokeless Kiln Burners have forged ahead to their present pre-eminent position.

The Smokeless Oil Burner Co.
Bucyrus, Ohio, U. S. A.
TANKS PUMPS METERS STRAINERS

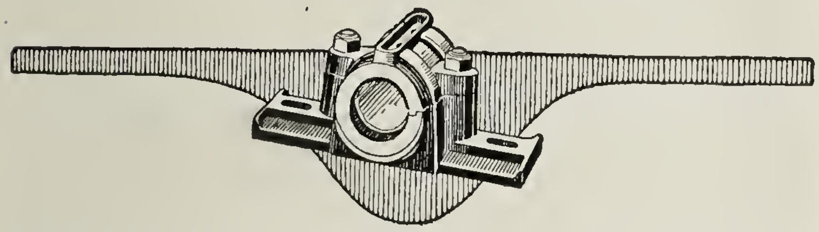
GEARS

SMOOTH running; correct in design, accurate and true to pitch, Caldwell gears are bound to please you. We make all types—machine-molded, cut tooth, mortise gears, worm gears, etc. Caldwell Promptness is Traditional. It is at your service. Our stocks assure prompt shipment.

Let us figure with you next time you are in the market.

H. W. CALDWELL & SON CO.' LINK-BELT COMPANY, OWNER
Dallas, Texas, 709 Main Street—Chicago, 17th Street and Western Ave.
New York, Woolworth Bldg.

CALDWELL



CONTROL YOUR HEATS

Without exact knowledge of furnace and kiln temperatures, control of heats is impossible.

Price indicating and recording pyrometers combine accuracy with serviceability in highly heated installations.

The Price reputation for reliability with accuracy has resulted in installations in the most discriminating plants in the country.

The Price Electric Co.
Under the management of H. A. Deiters
12369 Euclid Avenue
CLEVELAND, OHIO

We calibrate and repair all makes of instruments, including voltmeters, ammeters, gauges, etc.

Adaptability

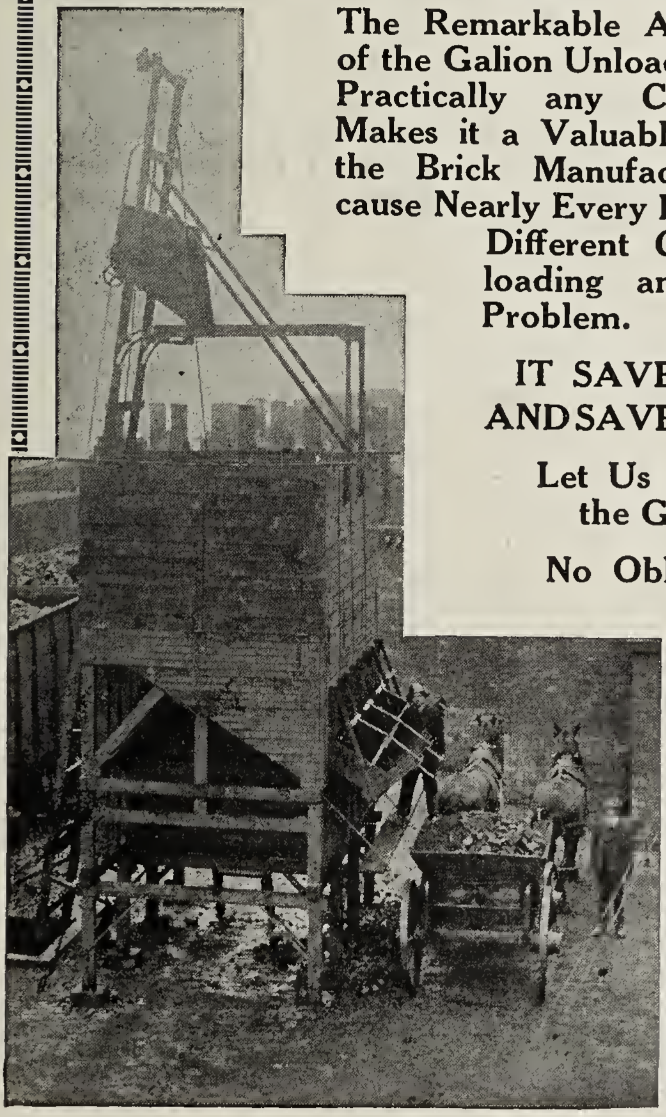
The Remarkable Adaptability of the Galion Unloader to meet Practically any Conditions Makes it a Valuable Asset to the Brick Manufacturer, Because Nearly Every Plant Has a Different Coal Unloading and Storing Problem.

IT SAVES TIME AND SAVES MONEY

Let Us Explain the Galion

No Obligation

The
GALION
Iron Works
& Mfg. Co.
Galion,
Ohio



Announcement

The American Dressler Tunnel Kilns, Inc., will have a message for the clay products industry in the near future which will be of considerable interest.

The message will appear in this paper at the earliest possible moment. In the meantime we are, as usual, ready to serve you.

American Dressler Tunnel Kilns, Inc.
1740 East 12th St. CLEVELAND

Dryer, Transfer and Clay Cars,
with Flexible Bearings.
Switches, Turntables and Track.

THE CHASE FOUNDRY & MFG. CO.
COLUMBUS, OHIO

CHASE

CAUCASIAN
OXIDE MANGANESE
Powdered—Granular
For Speckled Effects

PRECIPITATE
CARBONATE BARIUM
For Prevention of Scum
Thereby Producing
Deeper and Richer
Color

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ROESSLER & HASSLACHER
CHEMICAL CO.
New York

Chicago
Boston
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New Orleans
Pittsburgh

Kansas City
Cleveland
San Francisco

The Letter Box

A Place Wherein Letters That Have General Interest Are Published and Commented Upon

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WHY LABOR-SAVING EQUIPMENT FAILS

A clay plant engineer who read the article which appeared in the July 24 issue of Brick and Clay Record, entitled "Use Machines Instead of Men," wrote the letter which is reprinted below. This engineer gives a hint as to why a good many useful machines and equipment fail to succeed on clay plants. The lack of proper application or operation frequently prevents a machine from performing the duties anticipated from it. Nine times out of ten the machine or equipment is blamed instead of those who applied or operated it.

I noticed in your publication of July 24 an article entitled "Use Machines Instead of Men." This article interested me a great deal, perhaps owing to my occupation. As an engineer, I can see what I think is a great mistake that a great many of our clay manufacturers make in the installation of labor-saving machinery. The American, as a rule, is a great imitator. This is all right, for we must profit by the other fellow's experience in order to advance. But here is the trouble.

Mr. Brick hears that Mr. Tile has put in some labor-saving machinery, and forthwith climbs into his car and joy rides over to Mr. Tile's plant to see if it is all right. They meet and have a good visit. Mr. Tile shows Mr. Brick his new machine in operation and, being very proud of it, elaborates on its good qualities, which really are many.

Mr. Brick is convinced, and decides on the spot that he will have a machine like it just as soon as he can get it. After spending the rest of his visit talking over the poor prospects of future business, Mr. Brick goes home happy. Now this all sounds good, and is good as far as it goes. Again that "BUT."

Instead of getting the name and address of the engineer that installed the new equipment he saw, or the name of the makers, and taking the matter up with them, Mr. Brick tells his mechanic (who he pays 25 cents more a day than common labor) how the thing is constructed. He draws a few marks showing how it is put together and tells George how simple it is, entirely forgetting that George has seen it thru his (Mr. Brick's) eyes, which were not trained to see the mechanical points. So they go ahead and build the machine. Later they find it is an irksome problem. The equipment is always breaking down and taking more men to keep it in repair than it saves, and so forth.

Now George is a good fellow and a hard worker, but he could not figure the strength of a piece of steel or tell how much clay will feed thru a given size hole at a given speed of feeder per hour, to save his life. And furthermore, he had not had the opportunity to see the original machine, which probably required the services of a competent engineer for considerable time. They had always ground the shale with one crusher, but found that when the dirt was wet, this crusher was incapable of furnishing enough clay for their machine.

So they proceeded to install another crusher. The writer noticed that they were installing a short elevator that discharged into the boot of the original elevator from the first crusher. As I considered the capacity too small, and being on the very best of terms with the owners, I suggested a larger elevator or an independent elevator from each crusher. The mechanic put up this argument: "When we had only one crusher, and the dirt was dry, this elevator carried enough to keep our mill going, and if it will do it from one crusher, why won't it do it from two?" The mechanic never thought of the capacity of the crushers but the capacity of the mill.

* * *

J. K. MOORE TOURING EUROPE

Joseph K. Moore, consulting engineer of New York City, who specializes on service to clay plants, is making an extended trip through Europe at the present time.

If Marked BREWER It Is Good

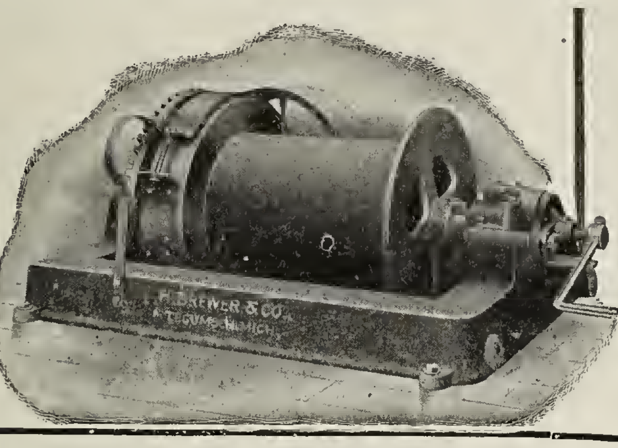
Clay Working Machinery

Block, Brick and Tile Machines
Pug Mills
Crushers
Granulators
Feeders
Disintegrators
Dry Pans
Cutters
Hoists, etc.

Free Engineering and Clay Tests

Brewer engineering service is available without charge or obligation. Competent men will give you best advice, look over your plant and make suggestions for any needed improvements. Take advantage of this free service. Send for Brewer catalog.

H. Brewer & Company Box 25 Tecumseh, Mich.



Records Speak Volumes

The unusual qualities of Caldwell Cypress Tanks are proven by their enviable records in all sections of the country. Perhaps this is largely due to the fact that, of all woods, cypress is the one which lasts best outside its native climate.

Thirty years experience in building tanks enables us to couple this remarkable tank wood with workmanship and design that ensure the maximum of tank satisfaction.

Send for Catalog

W. E. Caldwell Co.
Incorporated
2380 Brook St., Louisville, Ky.

Caldwell TANKS AND TOWERS

Made for maximum service not merely the average

TRADE JENKINS MARK

Jenkins Bros

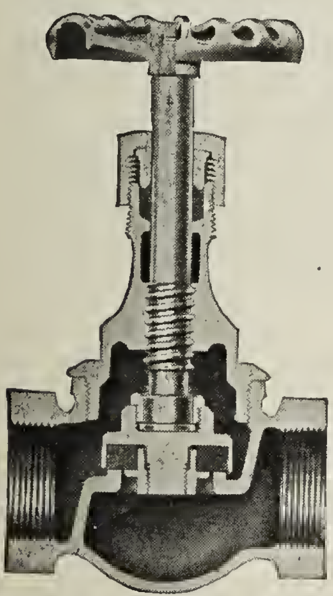
Valves of guaranteed performance

Constant care is exercised to maintain in Jenkins Valves the same high quality upon which their reputation has been built over a 58 year period.

This excellence is guaranteed to you by the Jenkins "diamond" and signature which is on every Jenkins product. Make sure they are cast on each valve body to be sure of longlived, dependable service.

JENKINS BROS.

New York Boston Philadelphia
Montreal Chicago London



Sectional View, Fig. 106, screwed, Standard Bronze Globe Valve.

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

2866-J

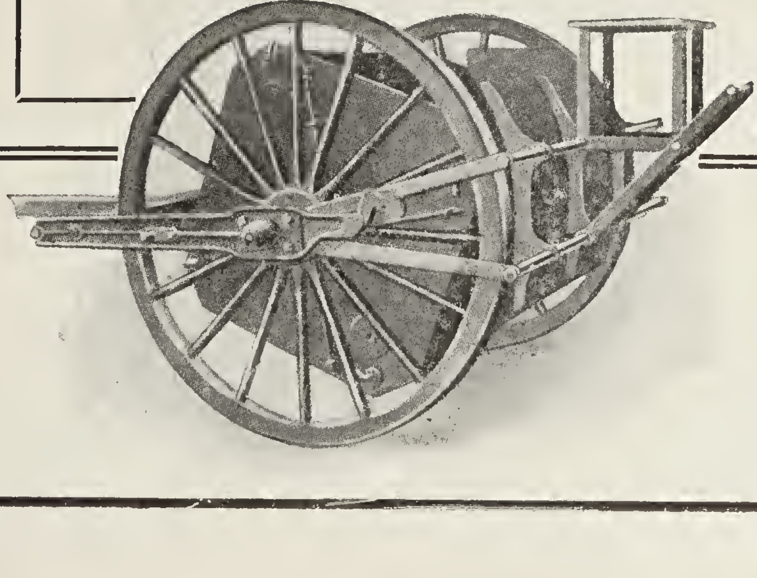
Gathers Clay at ½ Former Cost

The FERNHOLTZ CLAY and SHALE GATHERER is the most efficient known to-day to gather shale and clay.

Time and tonnage tests taken in brick, tile, and pottery plants thruout the country have established our slogan of "gathers clay at one-half former cost."

Write For Details of Savings Possible

Fernholtz Brick Machinery Company
ST. LOUIS, MO.

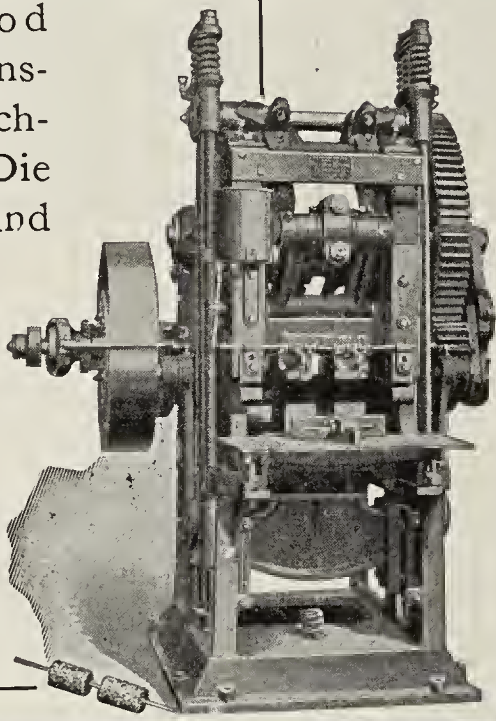


ROBINSON
CLAY MACHINERY

ROBINSON equipment includes everything for the clay plant.

We manufacture the Lakewood Dryer and Transfer cars, the Richardson double Die Steam Repress and the Pittsburgh Hot Air Dryer, mine cars and barrows.

See Our Catalog in the Clay Products Cyclopedia



FRANK H. ROBINSON
918 Behan Street, N.S.
PITTSBURGH, PA.

HY-GRADE MANGANESE CO.
WOODSTOCK, VA.

Miner and Grinders

Especially Prepared for Brick Making

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

J. HENLEY SYMONS STRICKEN

J. Henley Symons, for the past 14 years connected with the W. S. Dickey Clay Mfg. Co. of Kansas City, Mo., died suddenly on July 13. He had a wide circle of acquaintances in the clay industry, especially in the Middle West. Mr. Symons acted as a contract representative, giving special attention to municipal sewer work during his last four years' connection with the company.

BRICKELL SERIOUSLY ILL

W. D. Brickell, president and treasurer of the Iron Clay Brick Co., Columbus, is seriously ill at his cottage on the Scioto River northwest of Columbus. He has been ill for more than a year and a half and several operations were resorted to in order to save his life. He is a well known business man in Columbus and central Ohio and was the practical founder of the Columbus Dispatch, one of the leading newspapers of the Buckeye Capital.

UNTIMELY DEATH OF AULMANN

The recent death of L. Aulmann of Eagle Iron Works, Des Moines, Ia., recalls the activity of the above person, together with the other members of the Aulmann family, in developing the shale planer. The shale planer is probably destined to cut a more important figure in clay products manufacture in the years to come, and it is very unfortunate that one of the pioneers in the development of the machine had to pass away before seeing its more extensive use in the industry.

JOHN MORRIS LEAVES STREATOR COMPANY

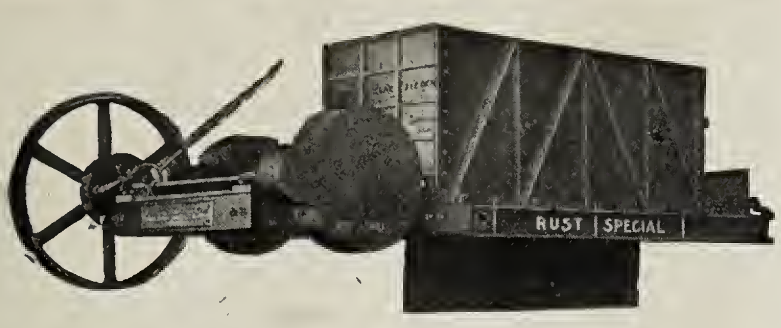
John Morris, secretary and manager of the Streator (Ill.) Drain Tile Co., tendered his resignation at the meeting of the board of directors of the company. Mr. Morris is retiring from active service in the company but still retains his interest. His future plans have not been announced. To fill the vacancy created by his resignation, the directors elected J. L. Tremper, secretary of the company. The other officers were re-elected. They are: C. H. Williams, president; James A. Reeves, vice-president, and W. C. Jones, treasurer.

AUSTRALIAN VISITS AMERICA

Thomas Campbell, of Wunderlich Ltd., Sidney, Australia, was a visitor in the offices of Brick and Clay Record recently. Mr. Campbell has been visiting a number of clay products establishments on the Pacific Coast and in the Middle West and is planning to go on East. He has found that the West is ahead of the East in modern production methods and operations. Mr. Campbell particularly deplored the character of the roofs on most small houses in the United States. "With us," he says, "the roof is the most beautiful part of the house and is built almost universally of clay tile. There is also some slate used."

FIRE BRICK MAN A DIRECTOR

E. H. Gartrell, general manager of the Ashland Fire Brick Co., Ashland, Ky., is one of the directors of the Associated Industries of Kentucky, Inc., which succeeds the Kentucky Manufacturers Association. This organization is composed of the large manufacturers, shippers and employers of the state, taking in the textile, big metal working, lumber, mill-



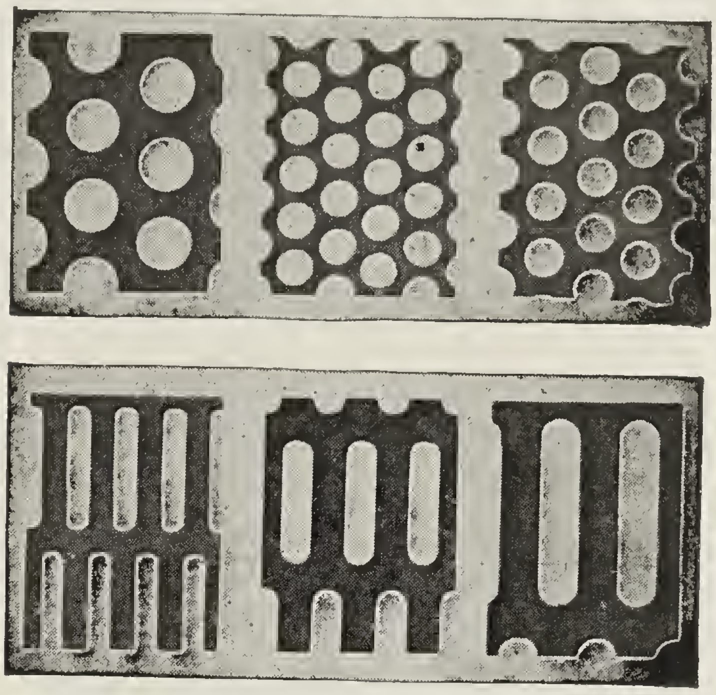
Improve Your Mix
with the
MARION
"RUST SPECIAL"
Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing Rust Feeder and full line of Marion clay plant equipment.

Marion Machine Foundry & Supply Co.
P. O. Box 395
MARION, INDIANA

Perforated Steel Screens

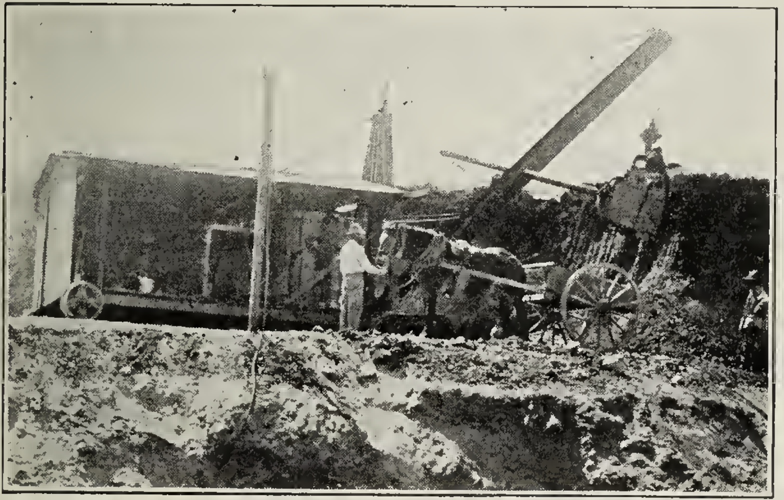


For Screening Clay, Shale, Sand, Gravel, Stone and Cement

All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

Sheets furnished flat or rolled to shape for revolving screens.

THE HARRINGTON & KING PERFORATING CO.
635 N. Union Ave., Chicago, Ill.
NEW YORK OFFICE: 114 Liberty St.



The FORD of the CLAY INDUSTRY

BAY CITY EXCAVATORS are low priced yet for the small or average size they serve the purpose of a large expensive shovel.

Cost under $3,500, including installation. Applicable for stripping as well as loading. Furnished with electric or gasoline power, and caterpillar treads.

THE
Bay City Dredge Works
BAY CITY, MICH.

The
Pilot

You Need in Kiln Work

Guess work and chances are eliminated the moment the pilot steps on the bridge. *A carefully charted course is rigidly followed.*
You too—in your kiln work—can secure the benefits of following a carefully charted course. Before each burn, "map out your temperature route" to pilot your burners.
Avoid the shoals of temperature variations. Eliminate loss of time and waste of fuel. How you can do this through the installation of Thwing Pyrometers will be gladly explained upon request.

THWING INSTRUMENT COMPANY
3347 Lancaster Ave., PHILADELPHIA, U. S. A.

Thwing
PYROMETERS

131

"MINSTER"
INDUSTRIAL LOCOMOTIVES

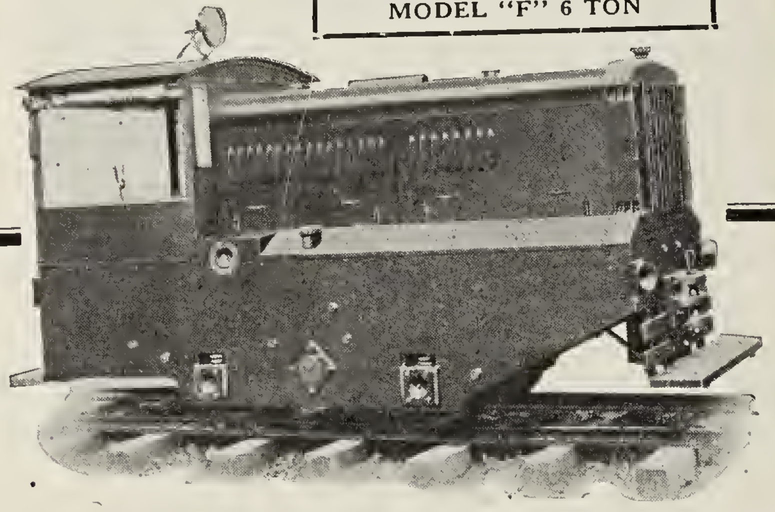
The Model "F" 6-ton Minster Locomotive has proven itself to be the most practical haulage unit for clay plant use, saving time and labor, and giving uninterrupted service day in and day out.

Made in 2 to 8 ton capacities.

Write for catalog.

The Industrial Equipment Company
510-512 Ohio St. MINSTER, OHIO
Eastern and Export Department:
The Herbert Crapster Co., Inc., 1 Madison Ave., New York City

MODEL "F" 6 TON



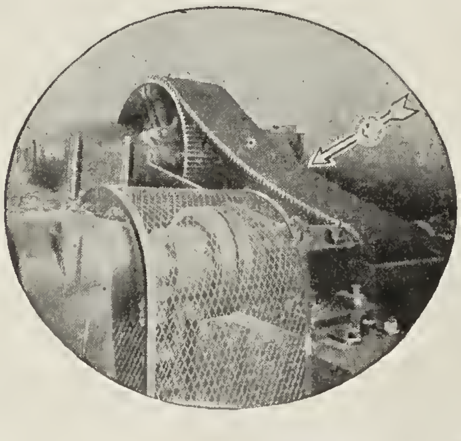
ATLANTA, GA BALTIMORE, MD. BOSTON DETROIT

MORSE Silent Chain Drives are 98.6% efficient for small or large drives. No worry about belt trouble, slippage of power and loss of production where Morse Chain Drives are installed.

Write us if you have a transmission problem. We give engineering service without any obligation.

Drop a Card to the Nearest Morse Engineer

MORSE CHAIN CO.
Largest Manufacturers of Silent Chains in the World
ITHACA, NEW YORK



PITTSBURGH, PA PHILADELPHIA MONTREAL MINNEAPOLIS NEW YORK CITY
SAN FRANCISCO ST LOUIS, MO TORONTO WINNIPEG, MAN
CHARLOTTE, N C. CHICAGO CLEVELAND KANSAS CITY, MO

ing and other concerns. Its work consists largely of keeping its members advised of legislation and other things affecting labor, taxation matters, etc. The secretary's office at Louisville gets out a weekly bulletin keeping members apprised of new conditions arising, court decisions, etc.

PLANS INCREASE IN CAPACITY

The Alabama Brick & Tile Co., at Decatur, Ala., which at present has a capacity of 25,000 brick and 15,000 tile per day, is further increasing its capacity.

SOUTHERN RATES MAY BE RAISED

John W. Sibley of the Birmingham (Ala.) Clay Products Co., one of the biggest manufacturers of brick in the Birmingham district, recently went to Washington, D. C. to confer with the Interstate Commerce Commission concerning freight rates on clay products in the South.

Mr. Sibley said that the railroads of the South proposed increasing freight rates on brick 30 per cent. per hundred pounds. "In the event this freight increase is allowed it will advance the price of brick from $1.50 to $2 per thousand, and this will have to be paid by the users of brick," Mr. Sibley said.

FLY WHEEL WRECKS ROOF

An odd accident at the plant of the Arkansas Brick & Tile Co., Little Rock, Ark., caused the temporary shut down of that company recently. Without any warning of trouble, the big four-ton fly wheel on the steam engine flew into pieces and wrecked the roof of the engine room. Fortunately no one was in the room and no one injured by the accident.

NEW ACME PLANT READY

The Malvern, Ark., plant of the Acme Brick Co. has recently been completed and is now in operation. This plant is reported to be one of the largest in the country and has a capacity of 24,000,000 brick per year. This new plant is modern in every respect, using electricity for the company's motors and gas for burning the brick. The company manufactures fire and face brick of every description.

CALIFORNIA FAMILY GROWING

News has been received of the organization at Anaheim, Orange County, Cal., of a company to be known as the Clay Products Co. This concern will build an $85,000 plant for the purpose of manufacturing tile. One of its features will be a tunnel kiln. It is hoped to have the factory in operation by October. Offices have been established in the California Hotel Building at Fullerton, Cal., and are rapidly being completed. The company will be capitalized at $150,000. The proposed factory will be under the management of Charles W. Parks. He is a graduate of the ceramic school of the Ohio State University. Mr. Parks has had considerable experience in the clay industry.

COMPLETE FIRST UNIT OF PLANT

The Vitrified Products Corp., of San Diego, Cal., has completed the first unit of its factory, and is about to begin the second unit. Geo. W. Kummer is general manager, and the output of the plant will be vitrified brick and tile.

COAST PLANT REDUCES TILE PRICE

It seems that something startling is always happening in Los Angeles. Despite the fact that the plants are so busy that customers must wait for delivery, the Los Angeles Pressed Brick Co. recently made the unusual announcement that they had reduced prices. These reductions have affected hollow tile and went into effect July 2.

Russell

TUNNEL KILN

Installed in your plant will—

—*Save labor*
—*Save fuel*
—*Burn product more uniformly*

Send our engineers your burning data. They will figure savings possible, free of charge.

Russell Engineering Company
Boston ST. LOUIS New York

IDEAL LOCATION
for CLAY PLANT

The Lake Erie, Franklin & Clarion Railroad serves the greatest industrial section in the world.

Of particular interest to prospective builders of clay plants is the combination of resources found along the right of way of the L. E., F. & C. clay adaptable for fire brick, face brick, paving brick, common brick, tile, etc., along with an abundance of high grade coal, are found in adjacent deposits. Power is available, trained labor is present in numbers, and a fertile market for clay products is adjacent. Transportation connections with all large lines.

When sending for information specify what type of material you are interested in

Lake Erie, Franklin & Clarion Railroad
FRANKLIN, : : : PENNA.

NEW YORK BELTING & PACKING CO. FOUNDED 1846 INCORPORATED 1856

Rubber Goods
for the Clay Industry

Test Special Rubber Belting
Indestructible Conveyor Belting
Elevator Belting
Firo Superheat Sheet Packing
Indestructible Sheet Packing
Cobbs Piston Packing
Steam Hose Water Hose
Pump Valves

NEW YORK BELTING & PACKING CO.
New York Boston Chicago
Philadelphia Pittsburgh
St. Louis Salt Lake City
San Francisco

THE MINTER SYSTEM
—200 Lbs. Coal per Ton of Ware—

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. Saving first cost of 6 tunnels and equipment.

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

DON'T BUILD BEFORE YOU KNOW

The Minter System Plants are Producing the Cheapest Building Material made in America today.

The Minter System
HOME OFFICE
Albany, Georgia
BRANCH OFFICE
215 Doctors Bldg.
Columbus, Georgia

Specialize on your
RUBBER GOODS

Rubber in some form is a vital necessity for the successful operation of any kind of industry.

It is absolutely essential in the manufacture of brick and clay products. Satisfactory results can only be obtained when rubber goods are correctly made for the conditions where they are to be used.

From our complete line you are sure of receiving exactly what is required for your plant.

- RUBBER BELTING
  - Conveyor
  - Transmission
- PACKINGS
  - Rod
  - Sheet
- HOSE
  - For all purposes
- PUMP VALVES, GASKETS, TUBINGS, ETC.

Let Us Know Your Rubber Needs—We Can Help You

QUAKER CITY RUBBER CO.

Mfrs. Mechanical Rubber Goods
Auto Tires and Tubes

Philadelphia, Chicago, Pittsburgh, New York

HENDRICK SCREENS
FOR ALL PURPOSES

ELEVATOR BUCKETS
CONVEYOR TROUGH and FLIGHTS
STACKS, TANKS,
GENERAL SHEET and
LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL
PLATE CONSTRUCTION

Ask for your copy of the Perforated Metal Handbook

HENDRICK MFG. COMPANY
CARBONDALE, PA.
NEW YORK OFFICE: 30 Church St.
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HAZLETON, PA., OFFICE: 705 Markle Bank Bldg.

STAGES PICNIC FOR EMPLOYES

Some people may not know it, but the clay workers appreciate a good time at times just the same as other human beings. So the pottery workers of the Gladding-McBean plant at Lincoln, in Placer County, Cal., staged their first annual picnic on June 24 at the auto park grove in Lincoln. Besides the inevitable picnic eats, there were plenty of amusements to add zest to the occasion. A baseball game, a field and track meet, and novelty races, gave ample variety. A terra cotta pressing and plaster mold building contest were fitting numbers on the program.

ORTMAN TO MANAGE IN SO. CALIFORNIA

Those who were interested in the announcement made in Brick and Clay Record a month ago as to the obtainment of control of the Tropico Potteries, Inc., Glendale, Cal., by the Gladding-McBean & Co. of San Francisco, will be glad to know the following additional facts. The Tropico Potteries, Inc., will continue to be operated exactly as in the past, as a separate and distinct corporation, altho the closest cooperation will exist between the two companies in the matter of standardization of methods and processes. Fred B. Ortman will continue as vice-president and general manager of the Tropico Potteries, and will assume the responsibility of the entire management of Gladding-McBean & Co.'s affairs in southern California.

CITY MAY PURCHASE BRICK YARD

Regardless of all the opposition to the project, a brick yard has been started in the vicinity of Inspiration Point, Denver, Colorado's pride, a real point that inspires any one viewing the wonderful scenes on all sides. Now that the yard has been started—the owner having a perfect right to do so—the city fathers say: "We may buy the ground, dismantle the plant and preserve the Point."

CHRISTIANA BRICK CO. FORMED

It is reported that the Christiana Brick Co., of Wilmington, Del., has been incorporated with a capital stock of $100,000. The Delaware Charter Co. of Wilmington is correspondent for the company.

LAUREL, CONN., PLANT CHANGES HANDS

The old brick plant of Laurel, Conn., has been taken over by the Builders' Brick Co. of New Haven, Conn. The new owner plans to put the plant into operation and expects to produce approximately 30,000 brick per day.

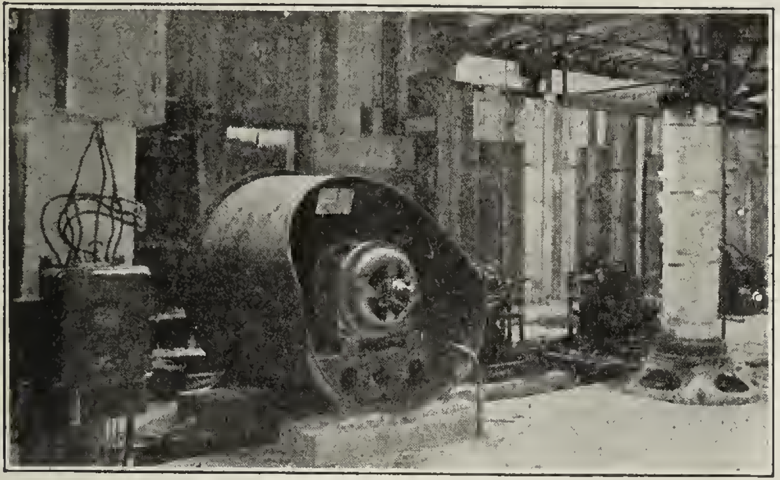
TO OPERATE OLD CONNECTICUT PLANT

The Builders' Brick Co., New Haven, Conn., has taken over old brick yard property at Laurel, on the Connecticut River, near Middletown, Conn., and will extend and improve the property for early operation. It is purposed to develop an output of about 30,000 brick per day. The plant has exceptional shipping facilities, allowing distribution either by rail or water. John O. Shares, Hamden, Conn., is president of the company.

TAX BILL AFFECTS GEORGIA PRODUCERS

A bill has been introduced before the Georgia State Legislature, now in annual session in Atlanta, to levy an occupational tax on all industries in the state described as "severing certain natural resources from the soil or water." This would include the brick and clay products industries, lumber, naval stores, etc., and if the bill passes it will require these industries to pay a tax in addition to present taxes amounting to approximately $1,000,000 per year. The passage of the bill is being opposed by the affected industries.

Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

Ask for information regarding T-J System of Burning Oil.

Tate-Jones & Co. inc.

Furnace Engineers Established 1898

PITTSBURGH, PA.

New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis

"WITH ONE MAN and one ERIE Shovel, we easily get our 300 cubic yards per day. This is sufficient to take care of the daily output at each of our 3 plants, but we could easily increase this output if necessary. In our opinion, the ERIE is *the* shovel."—*Edw. T. Conley, Sec'y, Bradford Brick and Tile Co., Bradford, Pa.* (Owners of 3 ERIES.)

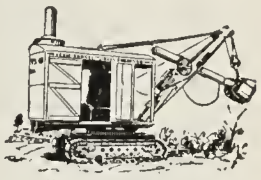
For larger output than the above—500 to 600 cubic yards per day, or more—it is advisable to use two men on the shovel. But when your plant requirements are not too great an ERIE and one man will serve.

We will be glad to send you data showing just what you can do with the ERIE. Write us.

ERIE STEAM SHOVEL CO.

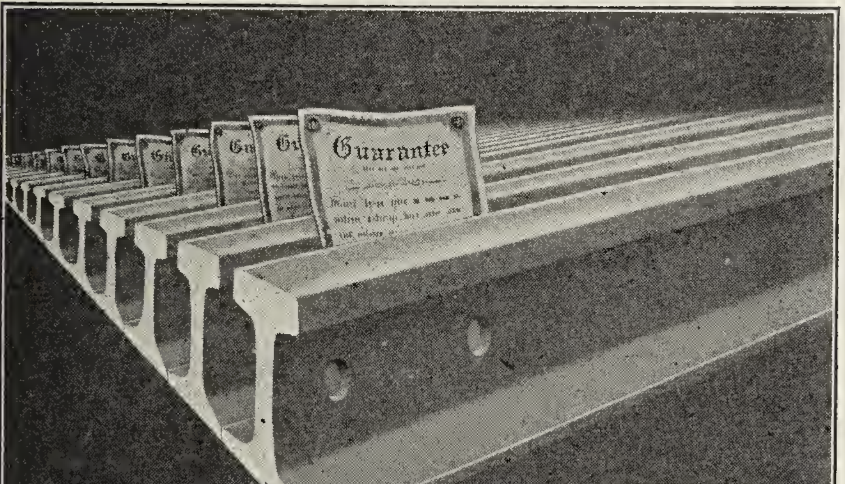
Formerly Ball Engine Co.,
Erie, Pa., U. S. A.

Builders of ERIE Steam Shovels and Locomotive Cranes



ERIE Shovels can be had with broad tired traction wheels, standard gauge car wheels, or on ERIE lubricated caterpillar type mounting. All interchangeable on the same truck frame.

ERIE Revolving Shovels ERIE Steam Shovel Co. Erie



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GUARANTEED!

RELAYING RAILS

30% to 50% below price of new rails.

Shipped subject to inspection and approval at destination.

New Rails
Relaying Rails
Frogs
Switches
Bolts, Nuts
Etc.

L. B. FOSTER CO., Inc.
Pittsburgh — New York

WAREHOUSES:
PITTSBURGH PHILADELPHIA JERSEY CITY HAMILTON, O.

Phone, Wire or Mail Inquiries, Given Immediate Attention

25,000 Tons in Stock

L-B FOSTER CO-
PITTSBURGH-PENNSYLVANIA

SALEM Genuine

Elevator Buckets

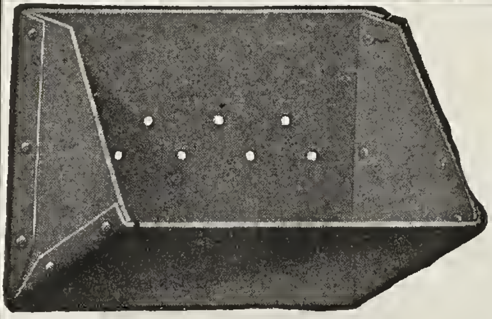


FIG. 133. Acute Heel Shelf Bucket, heavy duty, especially adapted for handling coal, stone, cement, ore, etc.

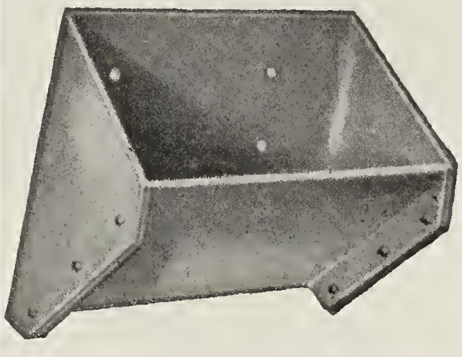


FIG. 1124. Trough Front, "Continuous Type" heavy duty steel bucket, used for variety of service conditions. Pours load instead of throwing it.

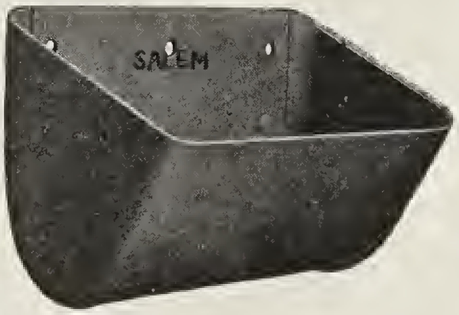


FIG. 668. "Salem." A heavy duty steel bucket; rounded contour throughout insures prompt, clean delivery; suitable for ores, coal, broken stone, etc.

Since 1880, when Salem Buckets were awarded First Premium for superiority, no other make of bucket has approached the Salem in quality, long wear and unusual service. It is made in many different sizes and gauges of steel ranging from 24 gauge to 6 gauge, and is adaptable for handling materials of practically any size, shape or weight.

Our ability to furnish special buckets made up in accordance with your specifications enables us to offer excellent service and prompt delivery.

Write for Catalog 3625

MULLINS BODY CORPORATION

Successor to
W. J. CLARK CO.
101 Mill St., Salem, Ohio

PLANT BETTERMENT SERVICE

A sincere interest in your problem, together with common sense methods and a broad experience makes this service highly profitable.

Write for details

WALLER CROW, INC.
Engineers
COUNSELLORS IN INDUSTRIAL
OPERATION & FINANCE
327 S LA SALLE STREET
CHICAGO

The ability and speed of the Northwest Gas Crawler Shovel, the fact that it does away with the costly maintenance and shifting of track, the low cost of operation, and the ease with which gasoline may be transported makes it ideal as an answer to the digging problems of the brick plant and clay pit.

Northwest Engineering Co.
1224 Steger Bldg., Chicago

NORTHWEST
GAS OR ELECTRIC
CRANE
DRAGLINE
SHOVEL

STATE OPERATED SEAPORT FOR SAVANNAH

A bill providing for the issuance of $15,000,000 in bonds for the creation of a state owned and operated port in Georgia, probably at Savannah, has been introduced before the Georgia State Legislature, now in annual session in Atlanta. The matter will probably be ultimately decided by the voters. The money is to be used in the establishment of warehouse and docking facilities, etc., and if the bill passes it will serve to bring about the material development of export business for Georgia industries, principally lumber, textile and brick and clay products.

BOOKLET ON GEORGIA CLAYS CAN BE HAD

The Central of Georgia Railroad has issued a booklet describing in detail the results of the tests of Georgia clays made at Columbus, Ohio, and copies of the booklet are being sent to the clay products industries in the state. It describes the refractory possibilities of the clays and shows that great possibilities exist for the wider and more varied uses of clays produced in the state. The principal and most valuable deposits extend from Augusta, Ga., to Eufaula, Ala., and considerable expansion of this industry is expected to follow the establishment of the School of Ceramic Engineering at the Georgia School of Technology in Atlanta. A copy of the booklet may be secured by any reader of the Brick and Clay Record by writing to W. A. Winburn, president of the Central of Georgia Railroad Co., Atlanta.

GEORGIA FREIGHT RATES A HARDSHIP

New freight tariffs that will bring about quite an increase in the rates on common and face brick are scheduled to go into effect thruout the southern states August 15, and are bringing a storm of protest from manufacturers of burned clay products thruout the section, who state the increases are entirely too great for the welfare of the industry, amounting as they do in many instances to as much as 30 per cent. above present rates. Undoubtedly the early result will be to bring about a sudden increase in the prices of the products affected, and such an increase at this time, the manufacturers fear, will have a serious effect on their business.

Hearings were held in Atlanta before the Interstate Commerce Commission and other southern cities earlier in the year, at which time the brick manufacturers proposed a new schedule that would have maintained rates about as they were, opposing the carriers in their effort to secure an increase. Southern manufacturers in the various states are preparing to file protests with the commission against the proposed increases, and will vigorously oppose them before submitting. Carriers in Georgia also are making an effort to secure a still further increase in freight rates on clay products and other commodities, and a hearing on the matter was held before the Georgia Public Service Commission in Atlanta the latter part of July. The proposed revision advocated by the carriers would increase some rates, and is being opposed by the clay products and other industries in the state.

CONDITIONS IN THE SOUTHEAST

Tho operations continue on a steady basis at the southeastern brick plants, and production is being maintained at a comparatively high level, demand lately has fallen off to some extent and is expected to remain more or less slack until early fall, according to statements to the Brick and Clay Record, the latter part of July by Atlanta manufacturers. As a result of the decline in demand common brick prices are off approximately $1 per thousand, tho face brick, tile and kindred products remain comparatively un-

Confidence!
Faith!

We have faith in our ability to better your kiln operation and results by equipping them with GATES AUTOMATIC STOKERS. We back this up by our willingness to show you any installation we have made.

This is as fair an offer as can be made by anyone, and, we believe, merits your confidence. Come and see them yourself—no matter how skeptical you may be.

The Clay Service Corporation
128 N. Wells Street
CHICAGO

Increase the value of your product by improving the color with

LAVINO
BRAZILIAN MANGANESE

"Best for Face Brick"

Economical
Adaptable to any Clay
Intense Staining Powers
Various Effects Obtainable
Uniform Analytically and Physically

Liberal samples and full information gladly furnished upon request.

E. J. LAVINO and COMPANY
Bullitt Building Philadelphia, Pa.
Grinding Plant: Plymouth Meeting, Pa.

TYPE 31 - Six Foot HUM-MER

HUM-MER
Electric SCREEN

Makes screening and crushing more profitable. Screens any material, wet or dry, from 2½" opening to minus 200 mesh

Send for Catalogue No. 45-B

THE W. S. TYLER COMPANY
CLEVELAND, OHIO
Manufacturers of Woven Wire Screens and Screening Equipment

BETTER QUALITY WARE

That is the result when Frost Dry Pans are put on the job.

THE FROST MFG. CO.
GALESBURG, ILLINOIS

QUALITY ECONOMY SERVICE

Stop Using Wheelbarrows

and the hand shoveling method to feed your dry pans. Labor is scarce and unreliable. With

ROBBINS Sectional Conveyors

properly arranged, one man will feed your pans better than three or four men can do it by hand shoveling. Give us a chance to solve your labor problems. Reduce your costs and speed up production.

WRITE TODAY

Robbins Machinery & Supply Co.
444 W. Grand Ave. Chicago, U. S. A.
"Machinery for Moving Merchandise"

Cut Your Burning Time

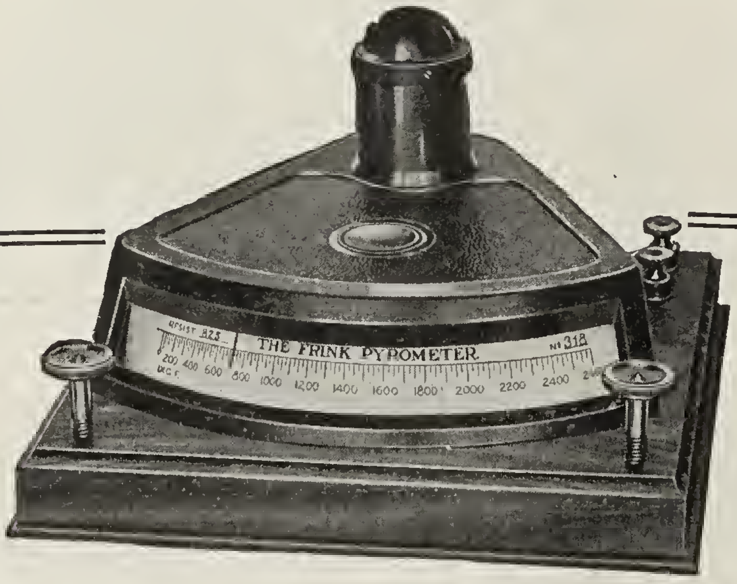
by equipping your kilns with

FRINK PYROMETERS

which afford perfect control of all temperatures—saving time and money in the burning and enabling your burners to hold even temperatures, thus improving the quality.

WRITE FOR DETAILS

THE FRINK PYROMETER COMPANY
LANCASTER, OHIO



changed, and no reductions of any consequence are expected.

Construction continues apace over the district, however, tho the activity is less noted than a month or so ago; manufacturers are looking for considerable improvement in this regard by the latter part of August.

The labor situation at the southern plants is getting materially better, and labor as a whole seems well satisfied with conditions.

Export trade in brick out of southeastern ports will likely establish new records this year, the first half of the year witnessing the biggest volume of this business in the history of the industry in the South. The increased export trade has been largely due to the active cooperation of the southern railroads, which have combined in the conducting of a campaign looking toward the expansion and development of export sales by southern industries.

INCREASES CAPITAL 50 PER CENT.

The Hamilton (Ill.) Clay Mfg. Co. has increased its capital stock from $100,000 to $150,000. This company manufactures brick, tile and crockery. The officers are Apollos W. O'Hara of Carthage, Ill., president; and R. A. Graham of Hamilton, secretary.

ILLINOIS GRADUALLY COMING OUT OF MUD

The state of Illinois this year has finished 322 miles of hard surfaced roads according to a highway department report of July 5 and has now under construction 1,118 miles. Bids are to be opened July 31 for 56 additional miles, 80 miles of heavy grading and 27 bridge sections. Another group of bids will be called for August 8. There have now been 1,875 miles of hard road completed in the state.

ILLINOIS BRICK CO. EARNINGS

The statement of earnings issued recently by the Illinois Brick Co. of Chicago establishes the fact that since the first of the current year figures have reached a new high record. The company's plants are turning out between 2,500,000 and 3,000,000 brick daily. The annual requirement of seven per cent. on the capital stock of $4,700,000 was more than earned during the first six months, according to Wm. Schlake, president. Mr. Schlake says that the company has sufficient orders on hand to operate at capacity for three months. At the present time, 1,600 men are being employed, which is 200 more than were working at the same time last year. Despite the tremendous activity, price of brick has not been changed. The $12 price was maintained in the face of a wage increase of 12 per cent. which was granted the workers.

TO SURVEY ILLINOIS FREIGHT RATES

All Illinois freight rates on brick will be subjected to a complete check by brick manufacturers of the state. This check is being made for the purpose of removing long standing inequalities between producing points. It is contended that these differences have hampered the development of the brick industry and have led to numerous complaints before commissions. The survey is expected to straighten out the tangle of rates.

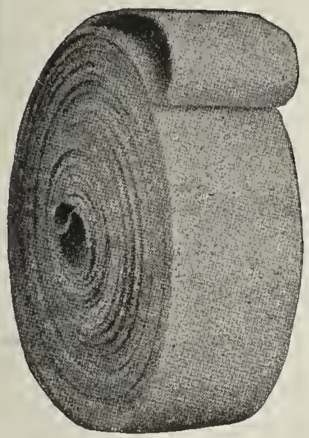
INCREASES CAPITAL STOCK

According to a report the Fort Wayne (Ind.) Tile Co. has increased its capital stock from $7,000 to $40,000.

INDIANA PLANT IN HANDS OF RECEIVERS

It has been reported recently that the Butler (Ind.) Brick & Tile Co. has been taken over in the hands of receivers, and that the assets of the company will be sold for the benefit of the creditors.

TEST *by* TONNAGE *not by time.*



GREEN DUCK BELTS

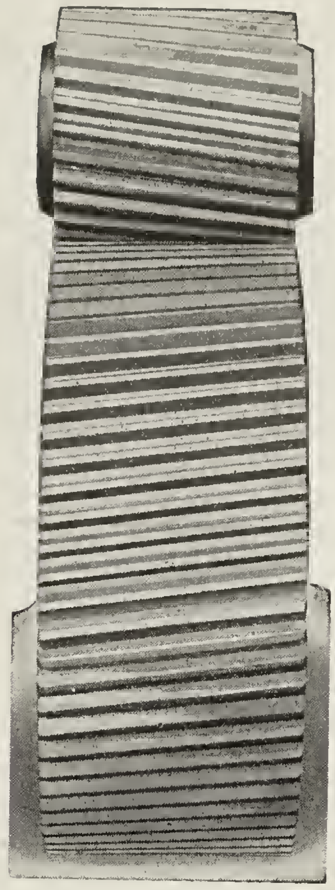
CONVEYING—

It's the tonnage that a belt has hauled that tells the story of its life; not the length of time it has served, including seasonal declines and shutdowns.

Tonnage records of Green Duck belting under all weather conditions have convinced operators that Green Duck has solved their knotty conveying problem. Whether it be from pit to plant, or inside the plant, Green Duck leads the field.

Write for samples and prices.

The Allied Belting Co.
GREENVILLE, OHIO



Silent Helical Gears

IF YOU were to offer twenty times the price, ***nobody*** could make you better gears than Nuttall BP Helicals

Let us send you booklets going into details on the subject.

R.D.NUTTALL COMPANY
PITTSBURGH PENNSYLVANIA

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SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK REGISTERED U.S. PATENT OFFICE
A CELITE PRODUCT

Kiln Insulation

HEAT lost through walls and settings of uninsulated kilns increases production costs

1—by causing an excessive consumption of fuel;
2—by making it difficult to get high temperatures and hold them evenly;
3—by causing imperfectly burned ware, due to uneven temperatures.

SIL-O-CEL Insulation reduces production costs

1—by preventing heat waste, thus lowering your consumption of fuel;
2—by holding a uniform temperature within the kiln and so reducing the number of rejects;
3—by protecting the outer walls of the kilns from temperature strains, prolonging their life and saving repair bills.

Complete information on Sil-O-Cel Kiln Insulation gladly sent upon request. Write nearest office for Bulletin B-5A.

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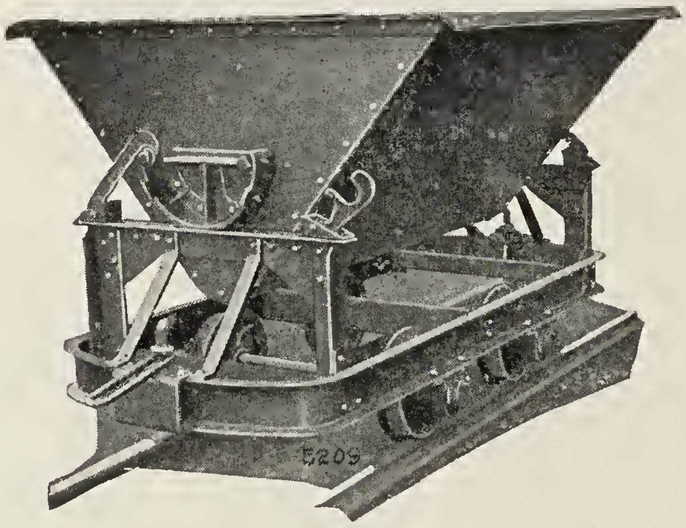
New York 11 Broadway Chicago-53 W. Jackson Blvd. San Francisco-Monadnock Bldg.
Offices and Warehouses in Principal Cities
CELITE PRODUCTS LIMITED, New Birks Bldg., Montreal, Canada



Type-504

Easton Car & Construction Co.
EASTON, PA.

OFFICES
Hudson Terminal .... New York
Morris Building .... Philadelphia
Kunkel Building .... Harrisburg
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Hearst Building .... San Francisco
Oliver Building .... Pittsburgh
McKevitt Building .... Norfolk
Andrews Law Bldg ..... Spartanburg, S. C.

EASTON CARS
FOR EVERY INDUSTRIAL PURPOSE

FORM TULIP BRICK CO.

The Tulip Brick Co., with a capital of $50,000, has been incorporated to manufacture clay products at Bloomfield, Ind. Beecher W. Bennett, Fred F. Reasoner, Philip J. Harrah, Allen G. Pate, and Henry Haywood are directors of the company.

AUBURN SHUTS DOWN FOR SEASON

Operations at the Auburn (Ia.) Brick & Tile Co. have stopped and the company plans to keep the plant shut down until next spring. For some time production has exceeded orders and the company has a good sized stock on hand.

SHEFFIELD TILE CO. STARTS

The sound of the whistle at the Sheffield (Ia.) Tile Co. on July 19 was very welcome over the village. The plant resumed work after an unexpected postponement in reopening under the new management because of delays in receiving necessary repairs for the machinery. 25 men are again at work, many of them the old reliable workers who were with the old firm. For the present the output will be tile, but there are prospects that the plant might double its capacity to manufacture building brick and tile in the near future.

COMPLETES IMPROVEMENT ON PRESS

The Progress Pressed Brick Co., Louisville, has about completed improvements to its dry press machinery, which will give it a greater compress, and a harder and better brick than has been produced in the old machinery.

GOOD MOVEMENT OF SEWER PIPE

The P. Bannon Pipe Co. reports excellent movement of sewer pipe, on municipal work locally and thruout Kentucky, and also on road work in many sections of the state.

REPORTS BUSINESS DISAPPOINTING

Louis Ernst, president of the Louisville Fire Brick Works, Louisville, Ky., reports that the company is busy and running full at both plants, but is not getting in as much new business just now as it would like to see booked. The company last year had the big Navy contract and has bid on it again this year, and received some business, but the bulk of the contract has not been placed as yet.

LOUISVILLE PRICES FIRM

Prices in the Louisville trade are firm and show no change. James Howington, of the Coral Ridge Clay Products Co., in discussing this matter remarked: "We're pledged to keep prices down." Such a pledge was announced in Louisville several months ago. Mr. Howington reported good business, the plant running at a good pace, and with enough orders on hand to keep it busy for three or four months.

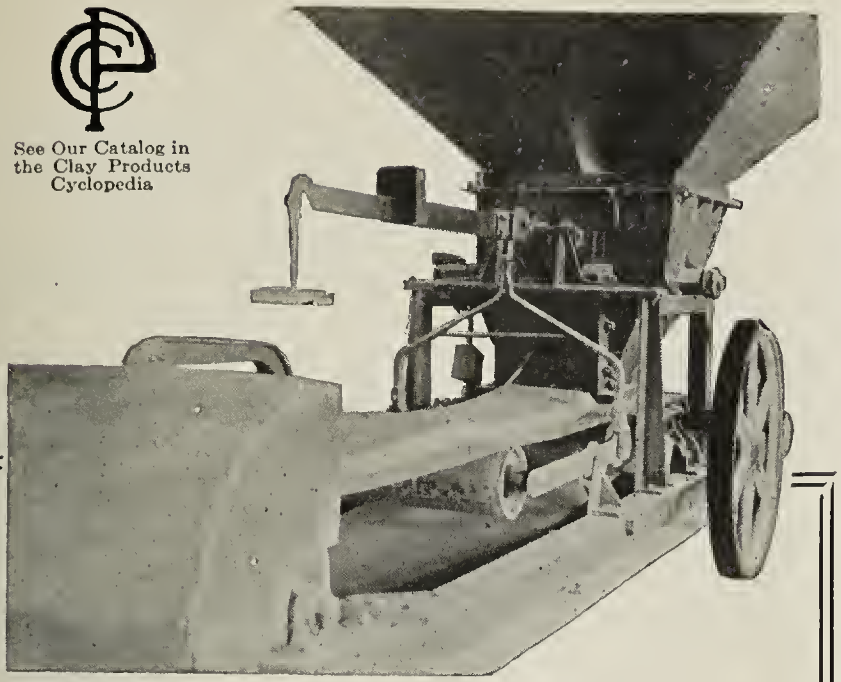
KENTUCKY BUSINESS GOOD

Business with the Louisville brick and clay industry continues good. Plants are busy on deliveries, while most of them are running full, and the general outlook is promising. While the Louisville Railway Co., and other large concerns have sidetracked some big jobs, there is still a larger number of small jobs coming out than had been anticipated, especially residence and apartment building, and the general building trades and supply manufacturers are finding business good.

NEW COMPANY IN MICHIGAN

The Crosswell (Mich.) Brick & Tile Co. has been incorporated, with a capital stock of $35,000.

See Our Catalog in
the Clay Products
Cyclopedia



GUESS WORK—*A Relic of Antiquity*

In ancient times the rule of thumb methods held sway, because refined means of measurement were undiscovered and present day methods of manufacture undeveloped.

Don't tolerate guesswork in your plant today. Mixing is now done scientifically and accurately with the Schaffer Poidometer. It mixes and feeds automatically and exactly, and eliminates a clay too "short" or too "fat."

Inquire of any Poidometer installation

Schaffer Engineering & Equipment Company
2828 Smallman Street
PITTSBURGH, PA.

S E E CO

No. 48 American Ring Pulverizer is widely used.

The World's Greatest Crushing Force

Here is a crusher that does its work with rings—powerful rings of manganese steel. A one ton striking force and a centrifugal force of 3500 pounds is behind every blow. Just imagine such power applied 10 times a second at any given point. That is the disintegrating principle of the

American Ring Pulverizer

If you pulverize a refractory material, you will be interested in the pulverizer that will do your work at the ***proved*** lowest operating cost; that has a guarantee unapproached by any other crusher in the world and that has hundreds of friends who are in the business of crushing.

Just let us know that you have a crushing problem and a trained engineer will be on the job. Remember, of course, that your invitation for him to call is without commitment on your part.

American Pulverizer Company
"We Crush Everything"
18th and Austin Sts. St. Louis, U. S. A.

Black 4th Vein **Betty**

Trade Mark Registered United States Patent Office

Time was, when "Indiana Coal" was introduced to a Clay Product Manufacturer by a salesman, he was laughed at. Then "Clinton Indiana Fourth Vein" entered the market—the expressions changed. Tests proved that this particular grade of coal could produce the best results, with lower cost than any other fuel.

Our organization avails itself of every opportunity and suggestion to improve the preparation—so when you send us an order you get

"Black Betty Coal"
"Zimmerman Service"

Which means Value in every sense of the word

Zimmerman Coal Company
609 Tribune Building
Long Distance Wabash 9921
Terre Haute, Indiana

BUILDING THREE NEW KILNS

The New Corunna (Mich.) Brick Co. reports that they are building three new kilns, which will bring their total number up to 12 in all. The plant is running to capacity and has a large number of unfilled orders on hand.

PLANT BURNS, WANTS MACHINERY

The brick plant of the Lockard Brick Works at Meridian, Miss., was totally destroyed by fire on July 8. The company is making plans for rebuilding, however, and is in the market for new and second-hand machinery for use in the manufacture of stiff mud brick.

FIRE DAMAGES ST. LOUIS PLANT

Damage to the extent of $500 was experienced by the Progress Press Brick & Machine Co., St. Louis, Mo., recently. It is believed that sparks from the fire in a brick kiln ignited the wooden brick storage shed, causing it to burn.

MISSOURI TOWN SHIPPING CLAY

Indications at Bland, Mo., are that many new clay pits will be opened in the field near that city. Clay hauling just now is assuming large proportions in the town and three carloads of flint and rough and burley clay are shipped every day.

BUYS CLAY DEPOSIT

The Missouri Fire Brick Co., St. Louis has purchased the Schirmer Farm on the North and South road between the Clayton and Manchester roads in St. Louis County, Mo. The farm contains 40 acres of valuable clay deposits.

HOLD CONFERENCE OF DEPARTMENT HEADS

The Fulton (Mo.) Fire Brick Co. has an outside activity in which the foremen of the company take an active part. This is a get-together supper which takes place once a month and the time is devoted to discussing plant problems and working of the plant. The last supper was held July 19 at a local cafe, after which the group adjourned to the home of G. M. Gamble for general discussion. The Fulton Fire Brick Co. has recently completed many improvements on its plant, including the addition of 12,000 feet of floor space and the construction of four more new kilns. The company employs about 330 men and recently set a record of producing 60,549 brick in one day.

REPORT SALE OF PLANT OFF

The referee and Joseph Parker, trustee for the Humboldt brick plant, owned by the Nebraska Clay Products Co., refused to recommend the sale of the plant at figures bid at the sale ordered by the federal court. The bidding began at $10,000 and ran up to $17,000. The sale was dismissed, as the plant, it is claimed, can be put in running condition for less than $20,000 and will pay running expenses and a good profit on the $100,000 investment. The plant is said to have a large clay bed of excellent quality. Several brick men from other states attended the sale.

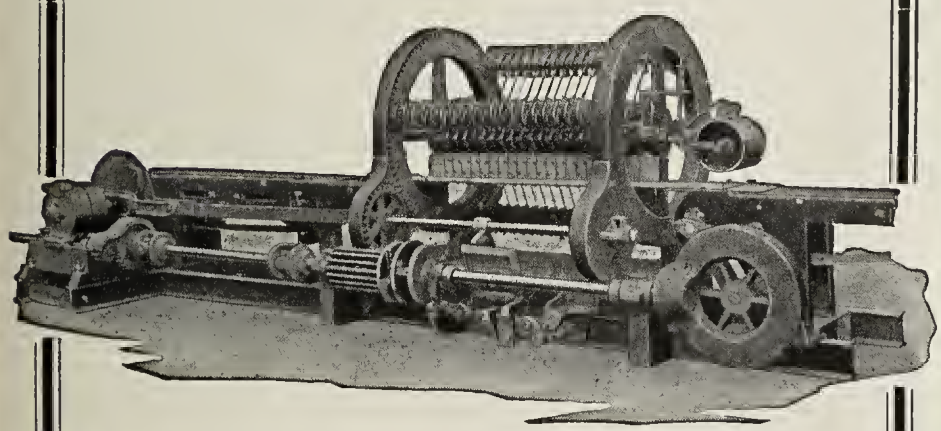
TO REARRANGE DEPARTMENTS AFTER FIRE

M. D. Valentine & Bro. Co., Woodbridge, N. J., will erect a clay storage building on the site of a building in which their clay grinding department was housed, and which was almost completely destroyed by fire on July 16. The clay grinding department will be located in a more convenient spot near the firm's clay deposits. The improvements will be completed within three months. The building, about 62 by 90 ft., which was gutted by fire, was of frame construction. The loss, about $10,000, was covered by insurance. Mr. F. R. Valentine supervised the wrecking of the ruins, and will also look after the construction of the new buildings. He gives the Woodbridge fire department credit for having prevented

Have You a Truly Automatic Cutter?

A truly automatic cutter should produce—without special attention—a **continuous** output of straight true brick. A cutter which does not perform this service is a machine which no brickmaker is rich enough to afford.

If yours is a difficult problem; or if your cutter is badly worn, or for other reasons is not giving the quality and quantity desired, a Freese Positive Cutter will prove a real investment—financially and mentally. Ask any of the several hundred users.



Freese Rotating Automatic Cutter

E. M. Freese & Company
Galion, Ohio

Dependable Machinery of Proven Efficiency

Georgia Clays Investigated

REPORTS of the U. S. Bureau of Mines by R. T. Stull and G. A. Bole, describe the tests made of Georgia clays.

"The Refractory Possibilities of Some Georgia Clays" concludes that "The Georgia sedimentary kaolins, bauxitic clays, and bauxites tested show deformation values from cones 34 to above 39; showed superior load carrying capacity and good resistance to spalling.

"Enough work has been done to demonstrate the fact that these refractory materials can be made into fire brick in a practical way both by the dry press and slush mold-repress processes.

"Furnace tests under actual working conditions have shown that the service rendered by fire brick made from Georgia sedimentary kaolins were at least equal to, and in the majority of cases superior to, fire clay and silica fire brick."

"Washing Tests of Georgia Clays" states that "the amount of English China clay used in the United States before 1920 was 1½ times the annual domestic production. This clay is used mostly for the pottery, paper, and oil cloth industries. Based on test data it is found that the Georgia clays by proper washing, blending, and storage, may be washed free of dark burning materials, and made into a uniformly burning product that may be readily put on the market on a competitive basis."

Reprints of these and other reports mailed on application.

J. M. MALLORY
General Industrial Agent

CENTRAL *of* GEORGIA
RAILWAY COMPANY
233 West Broad Street
SAVANNAH, GA.

the flames from reaching the other parts of the plant, production not being interrupted by the fire.

SEWER PIPE PLANT HAS ADDITION

The Uhrichsville (Ohio) Clay Co. is adding a new addition which will practically double its present capacity. This company manufactures sewer pipe and flue lining.

SEWER PIPE PLANT NEARS COMPLETION

P. A. Romig Sewer Pipe Co. is rapidly completing its new plant at Gnadenhutten, Ohio, which is near Uhrichsville. When completed this will be one of the most modern plants in the Uhrichsville section.

PLANNING TO BUILD TILE PLANT

It is reported that men from Logan and Hocking Counties, Ohio, are forming a company, for the purpose of building a tile plant at Greendale, Ohio.

STATE OWNED PLANT RECEIPTS

Receipts for the Ohio brick plant for the fiscal period ending June 30, were $159,684.91, according to a report of J. E. Clark, superintendent of manufacture, which was made public recently. This was the greatest revenue obtained from any of the manufactures under the control of the Department of Welfare of the Ohio State Government.

NEW OFFICE QUARTERS FOR S. P. FIRM

The Dennison (Ohio) Clay Co., manufacturers of sewer pipe, have nearly completed the construction of their new office building. The new building is constructed of red brick and is a very beautiful structure. The old office building will be used for supplies and headquarters for the superintendent and foremen.

NEW CLEVELAND FIRE BRICK CONCERN

Incorporation of the Inland Fire Brick Co., Cleveland, Ohio, has been announced. The company has a capital stock of $25,000. Following are mentioned as incorporators: George S. Davies, E. L. Parkin, George B. Young, A. M. Davies and F. H. Drake.

TO BUILD NEW ROOFING TILE PLANT

The Knoxville (Tenn.) Roofing Tile Co., is establishing a branch manufacturing plant at Nashville, Tenn., this summer, and is pushing the work fast so that the plant may be completed and ready to operate at the earliest date. The main plant of the company is at Johnson City, Tenn., and there is also a plant operated at Knoxville. John A. Pritchett has been named manager of the Nashville branch.

PLANS FOR NEW TILE PLANT

The Chamber of Commerce of Bellingham, Wash., has announced that the Cooperative Loan & Investment Co. of Tacoma, Wash., will build a $75,000 tile plant in Bellingham. It is said that plans of the company call for a plant which will employ approximately 75 men.

ONE OF TORONTO'S PLANTS BURNS

The Swansea, Ont., plant of the Toronto Brick Co., Ltd., located on Windermere Ave., was completely destroyed by fire on July 16 with an estimated loss of $30,000. The plant was of one story brick construction and employed 50 men. It was adjacent to the plant of the Dominion Sewer Pipe Co. at Swansea. In addition to this one the Toronto Brick Co. have three other plants, two in Toronto and one in Milton. The president of the company is Alfred Jephcott and the secretary and general manager is Frank E. Waterman. Harry Race was superintendent of the destroyed plant.

"Proctor" DRYERS

Famous for Economy

"PROCTOR" Dryers prove their wonderful economy in many ways.

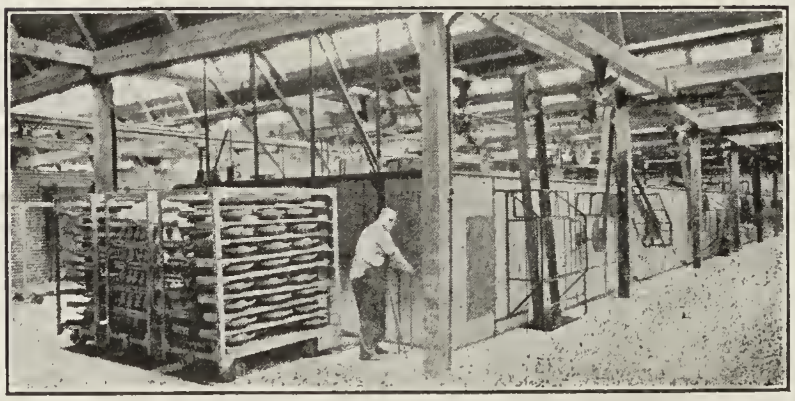
Of outstanding importance is the tremendous saving of time made by these machines wherever they have replaced other methods of drying. Not only have they radically reduced the actual drying-time for all kinds of ceramic wares, but always their systematic operation has accelerated the flow of ware to the kilns and cut down the production schedule.

Invariably the installation of "PROCTOR" Dryers saves a great deal of labor, space and steam over other methods.

Then, too, the perfect quality of "PROCTOR" drying has increased the percentage of first quality ware and decreased the loss from spoiled ware in a substantial measure.

There's a "PROCTOR" Dryer for **your** ware among the various types of these machines we build. Let us make you acquainted.

PROCTOR & SCHWARTZ, INC.
PHILADELPHIA



Tunnel-Truck Humidity Dryer for Electrical Porcelain, Saggers, Chemical Stoneware, Tile Refractories, etc.

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

A Goal for Which to Strive

EACH SUMMER the American Ceramic Society picks some geographical district where factories of interest to its membership might be inspected. This year it chose a very fertile field. Several members of Brick and Clay Record's staff attended the summer meeting held recently in the Detroit, Mich., district and reported astounding revelations in plant equipment and operating methods.

It seems that the ceramic plants in the vicinity of Detroit have caught the spirit of the motor car plants which abound in that district. No section of the country can show more unique factories with regard to mechanical perfection in production methods than those in and near Detroit.

The plant of the Champion Porcelain Co. is a marvel of efficient operating methods. The pottery industry would hardly recognize this plant as a scion of its family. It is an amazing testimony of what is actually possible when thought, study and ingenuity is given to production methods. Three machines of one particular type designated by the factory's own staff succeeded in eliminating 20 laborers and 200 girls in a department already thought quite efficient.

Henry Ford, pressed by the need for glass to equip his motor cars, has entered the glass industry. He employed engineers (not from the glass industry, peculiarly enough) to design an experimental plant embodying the ideas of continuous production. Those who were fortunate enough to be permitted to see this plant operating saw a revolutionary method of producing plate glass.

It was not so long ago when the glass industry was operating on a most primitive basis. Hand blowing and hand operating methods prevailed everywhere. A remarkable transition has taken place, however, and in the sheet glass field Henry Ford's plant is perhaps the pinnacle of mechanical development.

The secret of the motive that is behind every idea in improving operating methods is mass production and continuous processing. Mass production need not be necessarily large but it must be continuous. To make the operative keep up with the job rather than let the task await the operative is, in a nut shell, the object of Henry Ford's engineers and others who aspire to develop highest production efficiency. The product moves along and each worker must perform his particular job during the time the product is before him or it passes into the next department lacking of certain processing which can be traced to the proper source.

In the clay products industry manufacturing on the mass production scale is already in effect. Clay products plants lend themselves to this method of operation. Brick or tile are made in quantities of thousands, all alike. However, in the clay products industry we find that we have not as yet developed continuous production methods except in certain departments. Some of the phases of clay products fabrication are being operated on the continuous principle but this is not true in every department.

The tunnel kiln and the auger machine lend themselves admirably to continuous production. It is the hope of Brick and Clay Record that the industry will increase its endeavors to develop all of its operating departments on the continuous principle and to coordinate the various operations so that mass production of clay products will flow smoothly in a continuous process thru the entire factory.

When the above is accomplished clay products will be produced at a cost which will be low enough to reduce competition from substitute products to nil and the industry will prosper accordingly.

"Better Than Cutting Prices"

Is the title of a story appearing in next issue of Brick and Clay Record. It tells of an idea which a brick company conceived to get steady business without cutting prices. You'll find it worthwhile reading.

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They Said "We'll Do It." Not "It Can't Be Done."

BRICK & CLAY RECORD has always endeavored to encourage better business methods in the clay products industry. It stands in a unique position to see and understand what is going on within and without the sphere of the industry and for that reason is often armed with facts that others do not have the opportunity to gather.

Frequently by piecing together facts gleaned from various fields, Brick & Clay Record has been able to forecast certain new developments. With these in mind it has often severely, but constructively, criticised merchandising or operating methods. In some instances Brick & Clay Record has been very plain and outspoken.

Often it has been a pleasure to see (perhaps not until several years after the prognostication) a new development mature. We say these things without intending to boast. It is our duty to be the watchdog for the industry.

Many readers will perhaps remember that we have often referred to the antiquated and obsolete methods of producing common brick on the Hudson River. It will be remembered that we had predicted that a change in operating methods must take place.

It is with a great deal of pleasure that we credit the Jova Brick Works as leaders in production methods on the Hudson. An article in this issue of Brick & Clay Record tells of their equipment, which is a radical departure from the operating methods formerly in vogue.

The management of the Jova Brick Works has vision. They did what others on the Hudson River said was impractical. Since the installation of the new departures at the Jova plant others on the River have begun to follow suit. To the Jova boys belongs the credit of daring to be progressive and it is this spirit that the editors of Brick & Clay Record have always encouraged and which they have in their heart 365 days each year.

A. C. S. Sees Remarkable Plants

Porcelain, Glass and Refractory Establishments Visited on American Ceramic Society's Summer Meeting Trip—Fine Crowd of 160 Attended Meeting

THAT THE DETROIT DISTRICT is probably the most highly developed of any in the ceramic industry was the impression which seemed to force itself into the consciousness of the delegates to the summer meeting of the American Ceramic Society, held August 8, 9, 10 and 11 in Toledo, Detroit and Flint. The ceramic plants in the Detroit district seem to have caught the spirit of the automobile industry which is to employ everywhere the most efficient and modern methods.

The 160 delegates and guests who attended the meeting found ample inspiration in the many fine porcelain, glass, enamel, and other plants visited to make the time and money spent a profitable investment. Secretary Ross C. Purdy is to be congratulated for once again providing his "flock" with such excellent diversion.

Start From Toledo

The summer meeting was officially started at Hotel Secor, Toledo, on August 8. From there the party journeyed to the Owens Bottle Co., the Buckeye Clay Pot Co., and the Edward Ford Plate Glass Co.

The plant of the Owens Bottle Machine Co. was interesting especially because of the automatic bottle blowing machines in use.

The Buckeye Clay Pot Co. has in operation unique features used in the production of its ware, many of which were new to the visitors. This company is to be commended for having abandoned all antiquated methods and thoroly modernizing its factory. The glass house refractories made at this plant enjoy a reputation for high quality. One of the interesting and remarkable features of this plant is the unusual type of dryer by means of which the drying time has been cut from as long as four and six weeks to 15 and 18 days. Another development has been the sizing of dry blocks by machine which has proved to be a great labor saver. Extensive use has been made of the conveyor, and material handling methods are very efficient.

Ford Plate Glass Co. Visited

The Edward Ford Plate Glass Co., altho as a whole of the ordinary type, had some unusual features. Pots of glass are taken out of the furnaces by a big crane which picks them up and pours the contents on a bed where the glass is rolled into immense sheets. The furnaces are of large capacity, holding about 20 pots. Approximately 25 furnaces are in use.

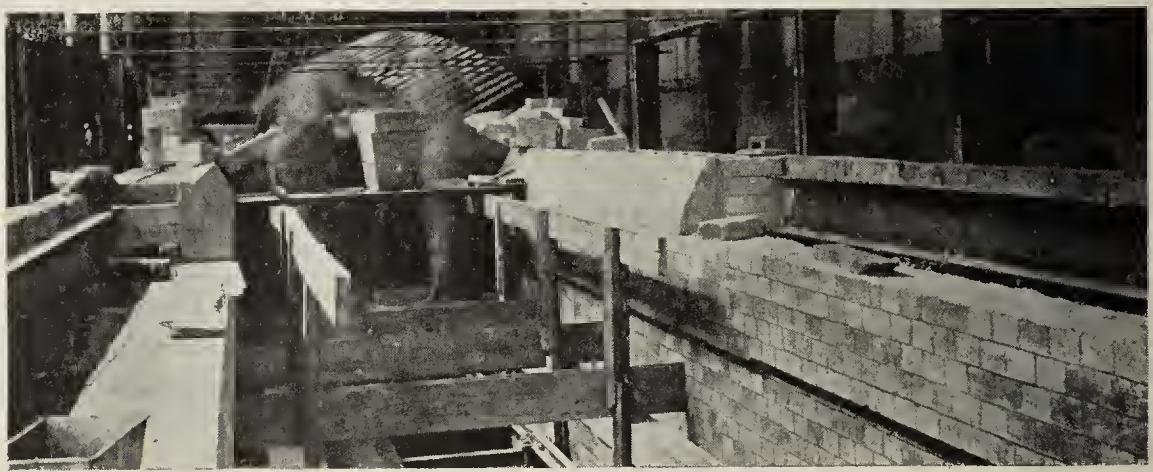
Next on the program was a motor trip to the Toledo Yacht Club where the delegates were served luncheon. This provided an excellent chance for the members of the party to become acquainted and during the round table of introduction which was started by secretary Purdy, E. E. Ayars took advantage of his opportunity to announce himself as "unattached," which caused considerable merriment.

Most of the party went to Detroit by boat and had a very enjoyable trip on the Detroit River. This city has so many plants that are famous that it was merely a question of visiting those of greatest interest to the ceramist.

Quite naturally the Ford plant was on the schedule for a visit. Here the world renowned Ford system of continuous production presented an opportunity to get many fine ideas. The ceramists were especially interested in the plate glass department at the plant. This is an experimental pour plate glass department and it turns out between 9,000 and 10,000 square feet of plate glass per day. The Ford system of production has been incorporated in this plant, resulting in practically revolutionary methods in plate glass producing.

Champion Porcelain Has Remarkable Plant

A rare treat for the delegates was next on the list—a visit to the Champion Porcelain Co.'s factory. Before going thru the plant the party was served with a complimentary luncheon. Dr. J. A. Jeffery, vice-president of the company acted as pilot and guide and explained the operation of the plant. The plant leaves nothing to be desired in adoption of mechanical devices, equipment and modern machinery. Labor, as a wasteful element, has been cut to the lowest minimum. In this connection one machine especially is interesting. This device, which supplants the old method of applying decalcomania trade marks, has saved the labor of 20 men and 200 girls. The machine is automatic and does both the printing and burning. A thoroly insulated oven which is heated by electricity to 1,600 deg. F. burns the trade mark on the spark plug. In the filter pressing an unusual method is employed. With the aid of an Ingersoll Rand Compressor which stores a quantity of compressed air, the clay cakes are formed in the press. An automatic control regulates the temperature in the tunnel kiln and pyrometers and other burning instruments insure absolute duplication of results. The Champion Porcelain Co. is recognized as having reached practically the highest stage of laboratory control over production in the ceramic industry.



A Novel Tunnel Kiln in the Course of Construction Is Used for Burning Spark Plugs at the Champion Ignition Co. Plant. It is Reported This Kiln Will Burn Spark Plugs to Cone 16 in a Little Over 13 Hours.

Lustre Ware Plant

Following the visit to this plant some of the party visited the Detroit Stove Works to watch the enameling plant in operation and later went for a trip thru the beautiful Gross Point section. Others visited the Pewabic Potteries, which plant makes a variety of very fine lustre ware. In direct contrast to the Champion plant this company uses the old methods of throwing its ware.

After a three hour trip next day, the party was escorted to

Detroit, the Home of Mass Production Was the Mecca of the Members Who Attended the Annual Summer Meeting of the American Ceramic Society. The Record Breaking Attendance Was Treated with Visits to Detroit Plants Where They Saw the Last Word in Mechanical Efficiency on Every Hand—All of the Plants Visited Are Described with Photographs in the Following Pages. Above Are Seen Snaps Taken at Random of Some of the Members Who Enjoyed Themselves at the Meeting.

Some of the More Prominent Members of the Society Are Shown in Various Poses—While Some Are Engaged in Weighty Problems (Judged by Their Expression). Others Are Evidently Very Much Amused—Right in the Center as tho Surveying the Entire Gathering Ross C. Purdy Appears to Be Anxiously Guarding His Flock to See That None Were Left to Stray from the Fold—Much Credit Should Be Given to Frank H. Riddle of the Champion Porcelain Co., Who with His Committee Worked Tirelessly to Leave No Stone Unturned That Would Cause Inconvenience to the Delegates.

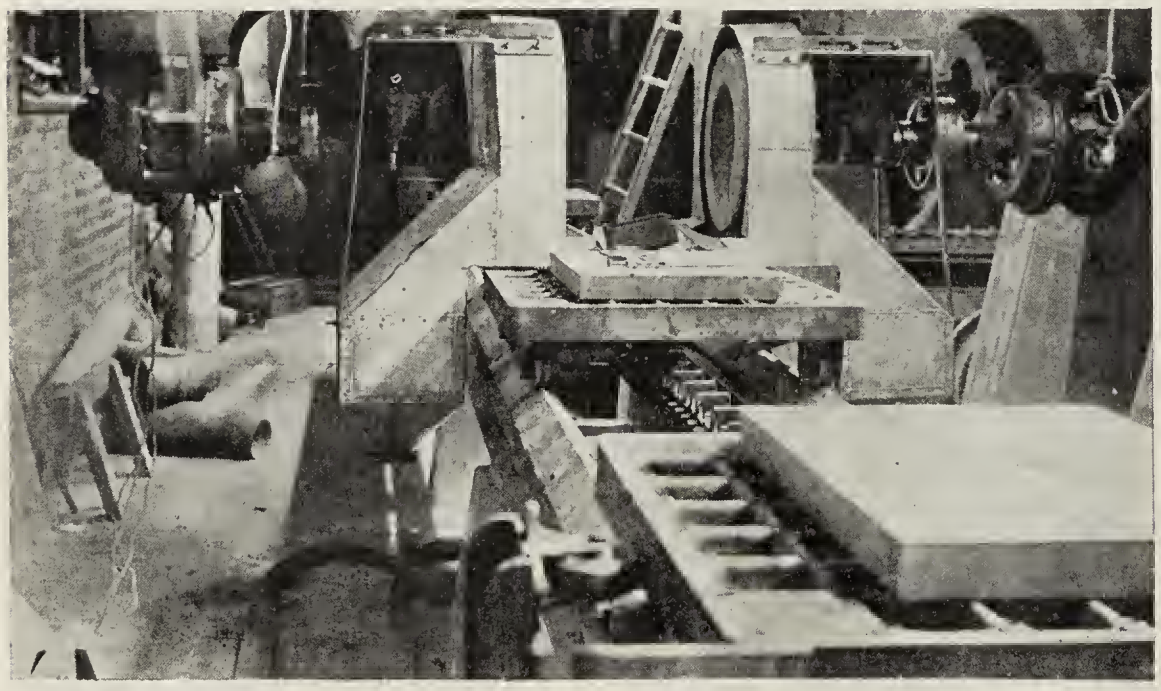
the Durant Hotel at Flint, Mich., where luncheon was served with the compliments of the Champion Ignition Co. In the visit to the plant which followed the luncheon, the ceramists had an opportunity to see a novel type of kiln which is in use at this plant and which proved extremely interesting. This kiln burns spark plugs successfully, it is said, in 13 hours, the temperature reaching cone 16 during this period. The fuel is city gas which is very efficient, the kiln atmosphere registering at all times about two to three per cent. excess O_2. An important part of this plant which held the attention of the party for a considerable time was the decorative art tile shop. This ware is fired in a continuous kiln at temperature equal to cones one to five. A great variety of colored glazes are produced. Here the delegates were presented with an attractive souvenir in the form of a paper weight.

Good Speaker at Banquet

The Buick Motor Co. at Flint was also on the list of plants to be visited and while there the delegates paid their last tribute to the memory of the President.

No summer meeting would be complete without a banquet, which is always looked forward to by the delegates. This meeting was no exception and on Friday evening, August 10, the party sat down to a delectable chicken dinner which fortified them for the talks to come after.

W. H. Ball of the Square D Co., manufacturers of electric switches, gave helpful suggestions and outlined methods by which a run down plant could be improved. The Square D Co. operates a porcelain plant which is used to manufacture insulators for switches and other electrical devices. This plant is equipped with labor saving devices thruout, an especially clever arrangement being the handling of saggers, which are carried direct to kilns and in the course of transit make a right angle turn without the slightest jar. The empty saggers are returned on the underside of the same belt which carries them to the kiln. In loading the kilns an immense saving has been accomplished. Whereas at one time it required ten men working 20 hours to fill a kiln, this work is now accomplished by five men working nine hours. It has been estimated that this saves the wages of two men for a year and it cuts the working time from ten to eight hours.



Rubbing Machine Squares the Burnt Tank Block and Leaves Them with a Surface as Smooth as Glass. This Is a Very Remarkable Piece of Machinery.

Tells How to Burn Spark Plugs

Dr. J. A. Jeffery of the Champion Porcelain Co. read a paper on burning of spark plugs. He brought out some of the difficulties incident to producing a good product in the kiln, such as absolute control over the carbon monoxide contained in the kiln atmosphere. To insure this the company is now experimenting on an automatic control device for the maintenance of the desired kiln atmosphere. Between the temperature equal to cone 12 and up to end of the burn the CO content is controlled by means of this device which operates on a main valve and allows the two set valves to remain untouched. In the Kenova plant of the same company it is essential that the temperature between cone 11 started and 12 down be controlled absolutely. This is necessary because of the difference in thickness between the center part and the skirt of the high tension insulators and this control is made possible by the automatic control system. The variation in temperature was checked with an optical pyrometer and found to be only two to three degrees. In the hot zones of the tunnel kilns in these plants the gas and air is fed to the burning chamber thru sillimanite tubes, which have proved very satisfactory.

A Number of Pots at the Plant of the Buckeye Clay Pot Co., Are Seen in the Drying Room Shown in This Photograph.

Saturday morning the members divided into groups and visited the River Rouge plants of the Henry Ford Motor Co., where the large glass units were inspected. The Wolverine Enameling Co., proved of interest to the visitors as did the plant of the Detroit Star Grinding Wheel Co.

While this summer meeting was not attended with the dash and "spirit" of last year's trip to Canada it was nevertheless a complete success and the unanimous verdict was that everyone spent a pleasant and profitable week.

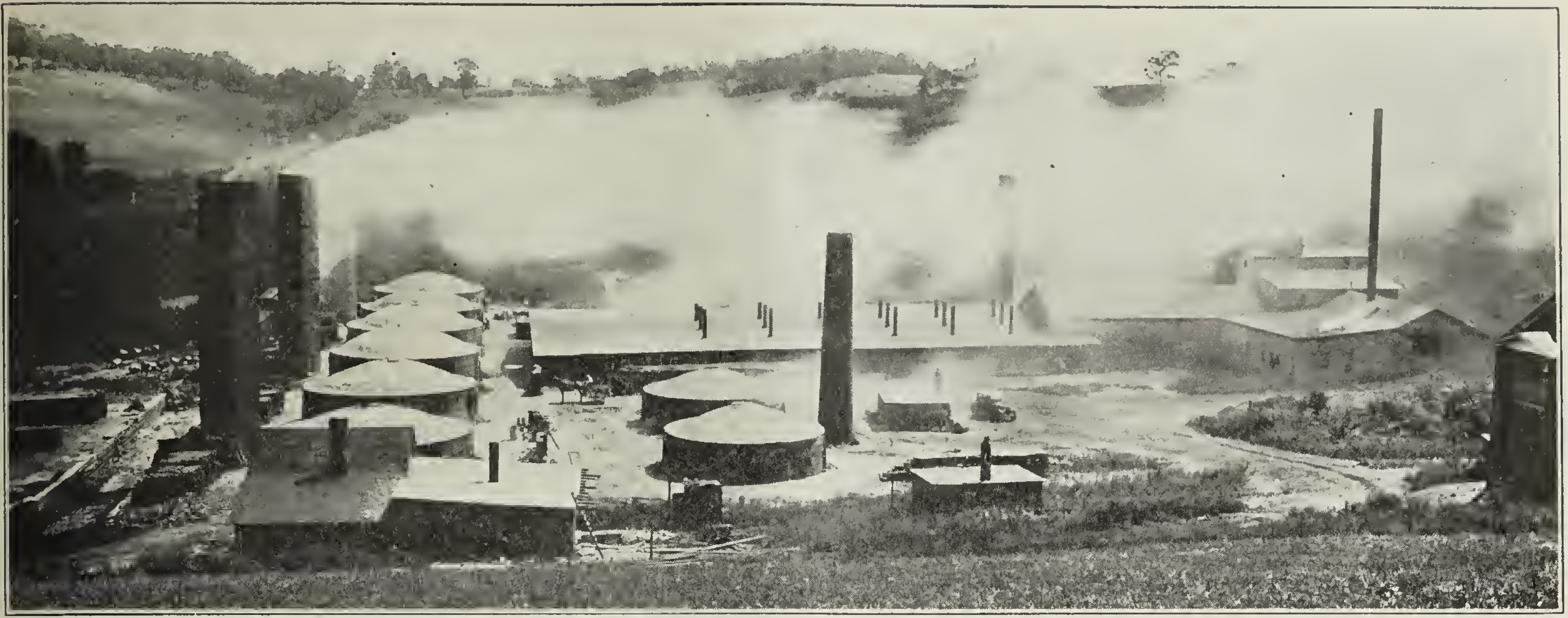
* * *

"NO CHECK OFF"—ANTHRACITE OPERATORS

In a strong statement entitled, "The union ultimatum—the check-off or no anthracite," the General Policies Committee of Anthracite Operators has expressed its position regarding the check-off system. The committee expresses the opinion that installation of the check-off should be resisted even at the expense of a nation-wide strike. In summarizing their conclusions, the anthracite operators say:

"We believe that the way out of this trouble is thru it. That the American people should resolutely resist this demand, coupled tho it be with the threat of a nation-wide tie-up. It is unwarranted by conditions in this industry. The judgment and experience of all industry are against it. In places where it has been tried the results have been disastrous and industrial warfare exists in extreme form.

"To grant it would mean an illegal combination and an abandonment of individual rights contrary to the declarations of the Presidents of United States for more than 20 years, as well as a repudiation of the principles of the Roosevelt award of 1903. It would extend the monopoly of the United Mine Workers of America, notwithstanding its practices have been under the condemnation of ex-President Wilson and President Harding, at a time when irresponsibility and a ruthless defiance of public interests and welfare dominate its policies."



Splendid View of the Robertsville, Ohio, Plant of the Canton Brick & Fireproofing Co., Which Gives a Chance to Study the Layout.

100,000,000 Face Brick Annually

This Is a Story of the Development of the Canton Brick & Fireproofing Co.'s Plants and Tells How That Company Is Planning to Reach a Production of 100,000,000 for 1924

SOME YEARS AGO,—in fact, it was quite a while back,—along in 1908 to 1910, a young man was studying medicine in an Ohio college. He was in need of funds to sustain himself at school so he was compelled to look for work outside of school hours. He obtained employment with a contractor and rapidly learned the method of building culverts. He soon developed a new and improved system for culvert building and formed a contracting company of his own which grew into considerable size.

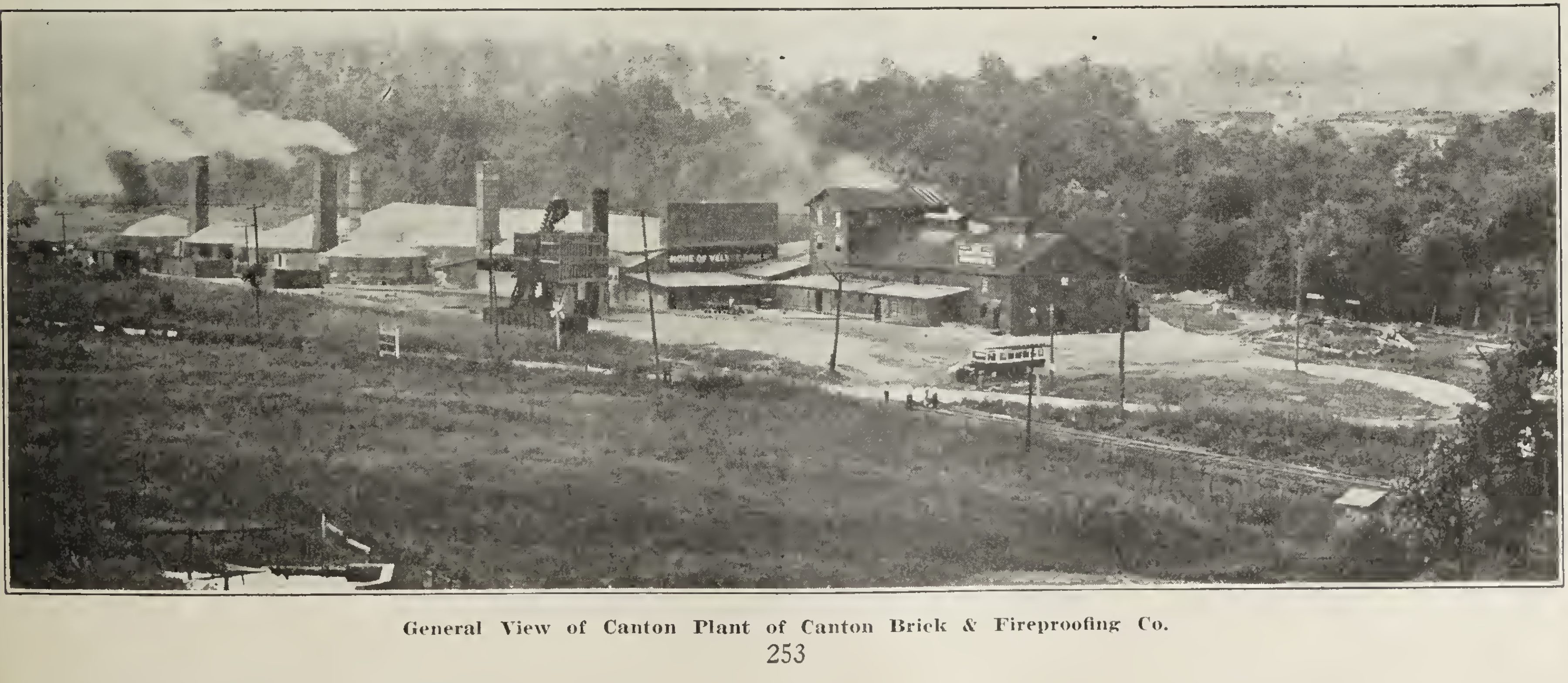
Later in a small town in Ohio where he was practicing medicine, he became president of the local chamber of commerce. He was very active in the promotion of industrial establishments in his community and advocated the development of the natural resources found in that section.

Ohio abounds in coal and clay and it was thru the development of the clay that this man first became interested in the clay manufacturing business.

Later a new bank in a nearby town was successfully promoted by the same party altho he was still practicing medicine. It is plain from the above hints of his characteristics that this man was a round peg in a square hole. Whereas, as a physician he must be content to be patient and wait for business to come to him, he was inherently a "go-getter" and obviously was not started in a career which fitted his nature.

Demuth Put Company on Map

This information, obtained from persons who have lived in the communities where our subject practiced medicine, refers to Dr. W. F. Demuth, president of the Canton Brick & Fireproofing Co., New Philadelphia, Ohio. This article is intended to describe the plants and activities of the Canton Brick & Fireproofing Co., but to do this properly, W. F. Demuth must be included in the story. In fact, the story of



General View of Canton Plant of Canton Brick & Fireproofing Co.

The Newest Plant of the Canton Brick & Fireproofing Co. It Is at Newcomerstown, Ohio

the Canton Brick & Fireproofing Co. is the description of the activities and personality of Dr. W. F. Demuth. "Doc" as he is known to his employes, friends, and in his community, is the prime mover behind all that is done and planned by the above concern.

Dr. Demuth started activity in the brick business by purchasing an eight kiln plant in Canton, Ohio, which had never been a money maker. This was in November, 1920, and can be said to be the date of the birth of the Canton Brick & Fireproofing Co.

Installs Modern Equipment

A steam shovel was purchased, horses supplanted by a gasoline locomotive, steam boiler plant thrown out, the plant electrified, a coal unloader installed, kilns rebuilt, kiln cooling fans purchased and other changes made. Many of these improvements had been completed when the plant commenced operations in July, 1921. By speeding up the burning and increasing kiln turnover, a production of 50,000 face brick daily has been obtained. To speed up the burning, two cooling fans have been placed on a single kiln at fire boxes on opposite sides. In this manner the time required for cooling has been reduced as much as three days. Shale brick are produced here.

In March, 1922, a plant in Robertsville, Ohio, was purchased. This is a red shale plant having about eight kilns and producing 40,000 brick daily. This plant had formerly made no money and one of the first things Dr. Demuth did, was to reduce the weight of the brick from seven down to 5½ pounds, by changing the dies and making several other changes, all of which improved the plant's efficiency.

Raises Million for Expansion

With the above two plants as a nucleus, a large company was formed of which Mr. Demuth is the largest stockholder. The company sold nearly all of its own stock, thereby saving brokers' commissions and raised over a million dollars in New Philadelphia, Ohio, and vicinity. With this money work on the above plants was carried on and two new plants started.

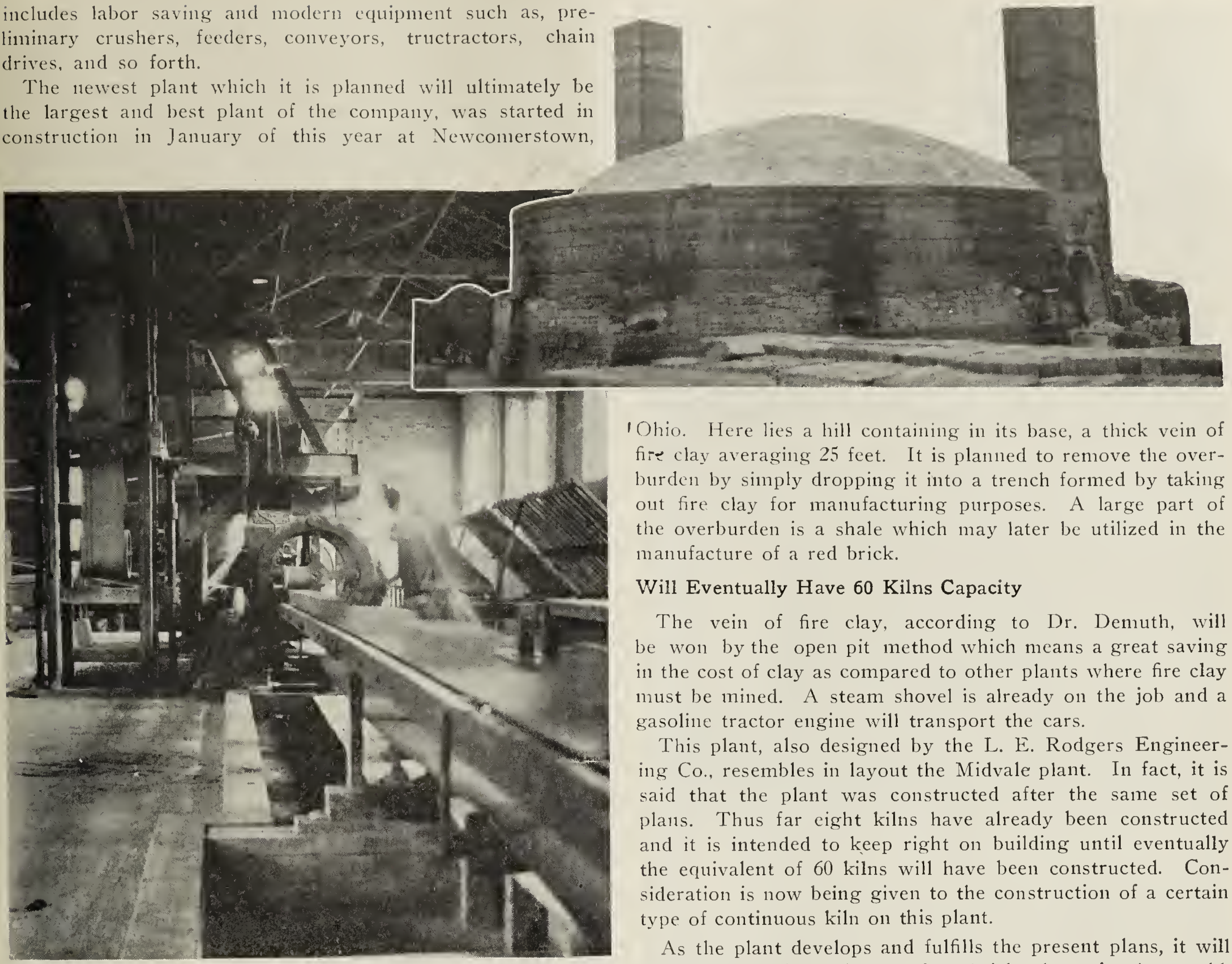
The Midvale, Ohio, plant was started in January, 1922, and at the present time has 11 kilns in operation and others under construction. At this plant buff brick are made out of a fire clay obtained from a 12 foot vein located in a hill bordering the plant. The roof of the fire clay mine is a vein of coal which is not being withdrawn, but which will be used some time in the future after the clay is taken out.

Plants Built by Rodgers

The kilns are all 36 feet in diameter with 12 fire boxes and flat grates. The plant is constructed according to modern practice embodying the ideas of the Canton Brick & Fireproofing Co. together with the L. E. Rodgers Engineering Co., who were the engineers on the job. The plant is arranged for the efficient fabrication and movement of all materials on a straight line towards the shipping track and

The Plant Here Shown Is Located at Midvale, Ohio includes labor saving and modern equipment such as, preliminary crushers, feeders, conveyors, tructractors, chain drives, and so forth.

The newest plant which it is planned will ultimately be the largest and best plant of the company, was started in construction in January of this year at Newcomerstown, Ohio. Here lies a hill containing in its base, a thick vein of fire clay averaging 25 feet. It is planned to remove the overburden by simply dropping it into a trench formed by taking out fire clay for manufacturing purposes. A large part of the overburden is a shale which may later be utilized in the manufacture of a red brick.



Immediately Above Is Shown the Machine Room at the Midvale Plant. The Kiln Shown Is Equipped with Two Portable Cooling Fans, on Opposite Fireboxes.

Will Eventually Have 60 Kilns Capacity

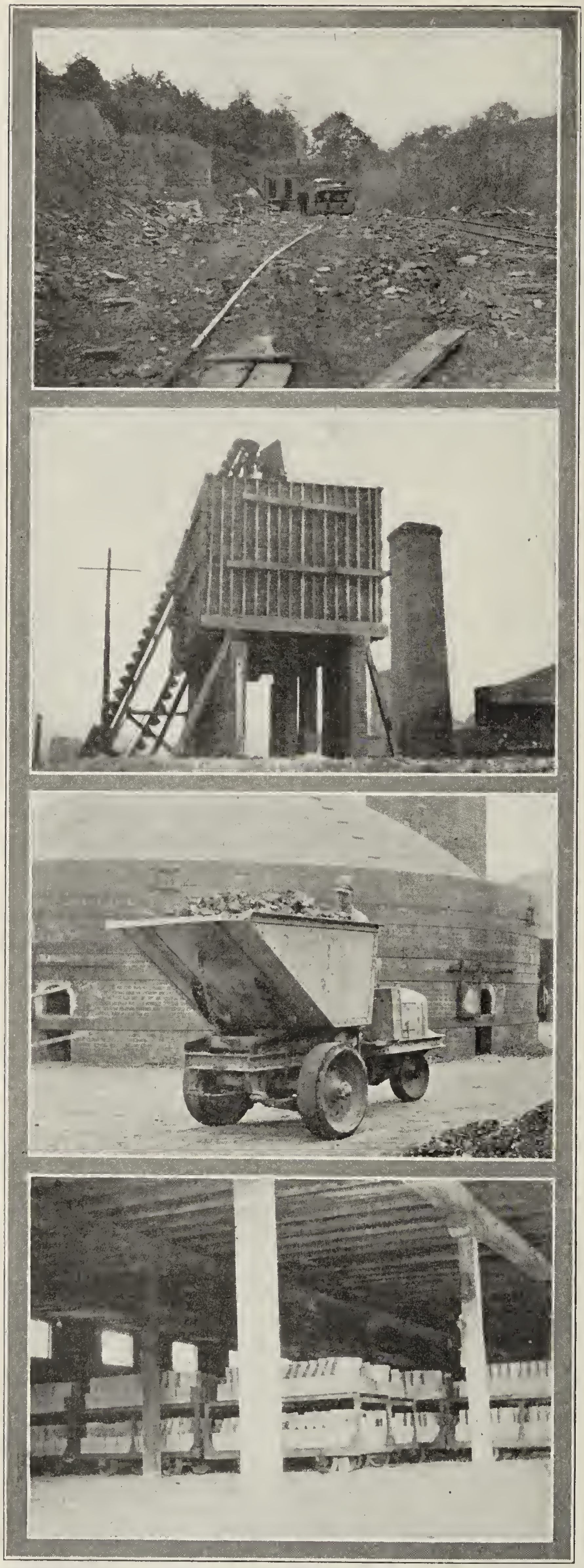
The vein of fire clay, according to Dr. Demuth, will be won by the open pit method which means a great saving in the cost of clay as compared to other plants where fire clay must be mined. A steam shovel is already on the job and a gasoline tractor engine will transport the cars.

This plant, also designed by the L. E. Rodgers Engineering Co., resembles in layout the Midvale plant. In fact, it is said that the plant was constructed after the same set of plans. Thus far eight kilns have already been constructed and it is intended to keep right on building until eventually the equivalent of 60 kilns will have been constructed. Consideration is now being given to the construction of a certain type of continuous kiln on this plant.

As the plant develops and fulfills the present plans, it will become one of the largest face brick plants in the world, perhaps the largest face brick plant manufacturing buff, iron spot and manganese brick. As in the Midvale plant labor

Left—At the Newcomerstown Plant of the Canton Brick & Fireproofing Co. Overburden of Shale Must be Stripped to Get at the Vein of Fire Clay. The Picture Shows the Deposits.

Right—Open Pit Method of Winning the Fire Clay Will Be Resorted to at Newcomerstown Plant. Picture Shows an Osgood Shovel Loading Clay in Cars Hauled by a Brookville Locomotive.



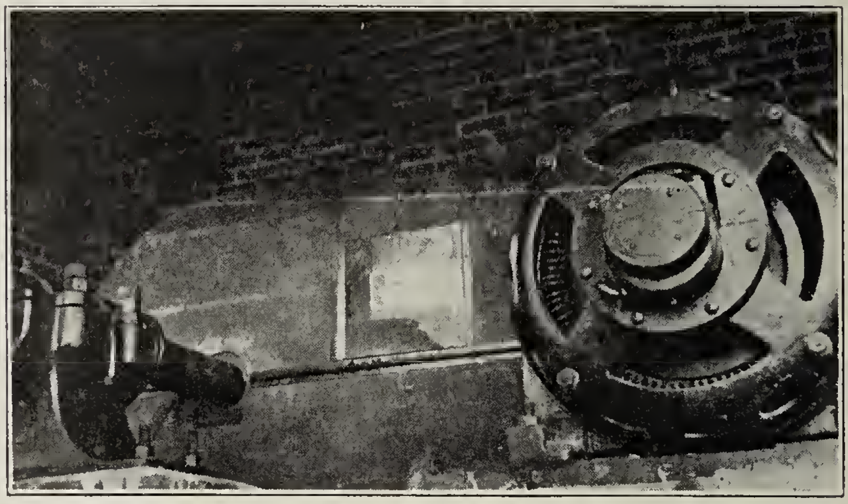
These Pictures Are, from Top to Bottom:
1. Shale Pit at Canton Plant Where Red Brick Are Made. 2. Coal Unloader at Canton Plant. 3. Clark Tructractor Used at Midvale Plant to Distribute Coal to Kilns. Note That Kiln Yard Is Brick Paved. 4. A Feature of the Dryer Is the Unusually Large Storage Room Permitting Greater Flexibility in Setting Kilns. Storage Space for Five Cars Per Track Has Been Provided.

and cost saving equipment is being installed. Poidometers measure accurately the clay and iron used to make iron spots.

How Dryer Was Built

In constructing the dryer on this plant precaution was taken so that there would be room for 100 cars storage on the cooling platform, or over 50,000 brick. In other words, the storage track on the exit end of the dryer has a capacity for five cars at each tunnel and for three cars at the entrance end. The kilns are 36 feet kilns with open bottoms, two kilns to a stack. Two railroad spurs will be run into the plant, one on each side of the storage shed.

As said before it is aimed to make this plant the largest and most important unit of the company. By being able to win the fire clay by the open pit method considerable saving in cost of mining is made. Thus with a large production and a modern plant coupled with the advantages of low fuel costs and low material costs, it is expected that this plant will be producing brick at an extremely low cost.



Dryer Fan Motor Equipped with Morse Silent Chain.

Efficient Production Necessary

The above briefly gives the reader an idea of the type and equipment of the four plants of the Canton Brick & Fireproofing Co. But the four plants efficiently constructed and capable of efficient operation, will not insure success. The product must be efficiently produced, and moreover, sold at a profit.

In describing the promotional activities of Dr. Demuth in the opening frame of this story, a good clue was given as to his capabilities as a manager. The Doctor's philosophy is very interesting and in many respects unusual. In every room in the central offices which are located in New Philadelphia, Ohio, and in the offices of the various superintendents, will be found a sign with the following terse statement: "It Can and Must Be Done." This, Dr. Demuth says, is the company's motto. It is plain that it symbolizes persistent plugging and this is what Dr. Demuth believes in and insists upon. According to his own words, "It is not essential to be a whirlwind in brain power but persistent hard plugging will bring one success. Set out for a mark and strive for it with all your power."

Qualifications of Demuth's Foreman

In hiring men or superintendents, Dr. Demuth has followed an unusual policy. He has preferred men who have had no previous training in clay products manufacture but, who, in their former positions, showed aptitude in managing men, getting out production and were for harmonious working. Maximum production or running the plant to capacity is vigorously insisted upon. Every foreman or superintendent must make good on this point or he doesn't hold down his job very long.

It is very notable that harmony prevails everywhere thruout the organization. Every superintendent and even the employes refer to their president as "Doc." Dr. Demuth takes special pains to recognize and call by his first name, every employe he meets.

Loyalty Keynote of Success

Dr. Demuth believes in giving his men responsibility. "Give responsibility to a man and he will work for you," says Dr. Demuth. "Loyalty is the keynote of our success from the board of directors down to the lowest paid laborer."

Guessing costs is abhorred by the Canton Brick & Fireproofing Co. A modern cost record is kept on all plants and complete monthly statements are ready ten days after the first of the month.

One of the most interesting phases of this company is its sales policy. Dr. Demuth believes strongly in cultivating the building supply dealer and in selling thru him exclusively. Direct sales will be discouraged and a big dealer organization worked up. Already 300 dealers are on the books of the Canton Brick & Fireproofing Co. It is the aim of Dr. Demuth to make a friend of every dealer, give him the very best service, back him up on sales and in return for this he expects the dealer to produce for him.

Will Keep Huge Stock on Hand

So as to insure the dealer of brick against any special emergency demand, a stock of from 20,000,000 to 30,000,000 brick will be kept on hand so as to be available for shipment on a minute's notice to any dealer. Three different railroads, all good on car service, tap the plants of the Canton Brick & Fireproofing Co. These are the Pennsylvania, Baltimore and Ohio, and Wheeling and Lake Erie Railroads.

This winter, panels will be made up of the various brick textures, which include both smooth and rough texture brick in red and variegated shale brick colors, as well as buff, gray, iron spot and manganese brick. These panels will be sent free to dealers for display purposes. A strong advertising campaign for dealers, backed up by service along the lines outlined above, is planned and it is aimed to have eventually 4,000 to 5,000 dealers, including every town of 5,000 inhabitants or more east of the Rocky Mountains selling the products of the Canton Brick & Fireproofing Co.

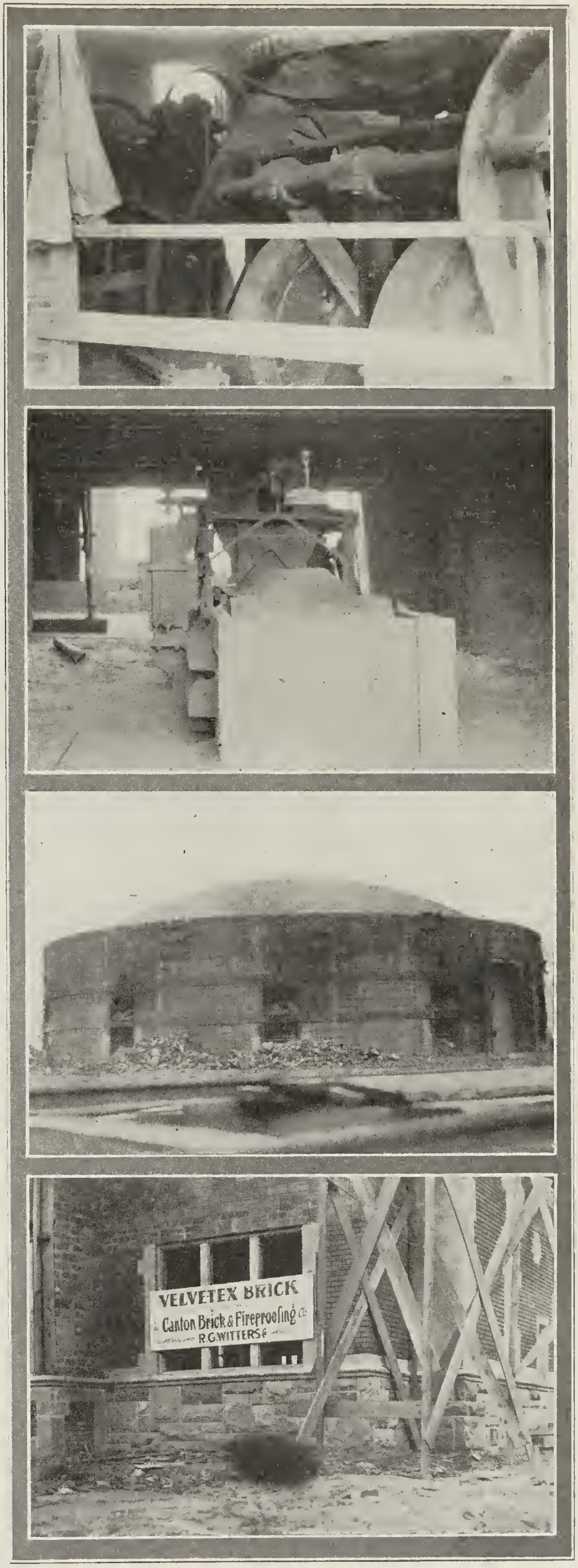
Growth of Company

An interesting story of the growth of the Canton Brick & Fireproofing Co. is told by its annual production figures since its inception. According to Dr. Demuth, in 1921, 4,000,000 brick were produced; in 1922, 17,000,000 brick were produced. Already this year the 1922 figures have been exceeded and it is anticipated that 1923 will round out a total of 42,000,000. By the end of 1924 it is aimed to have a production of 100,000,000 brick on the four plants, of which over half will be made at the new plant now in development in Newcomerstown, Ohio.

* * *

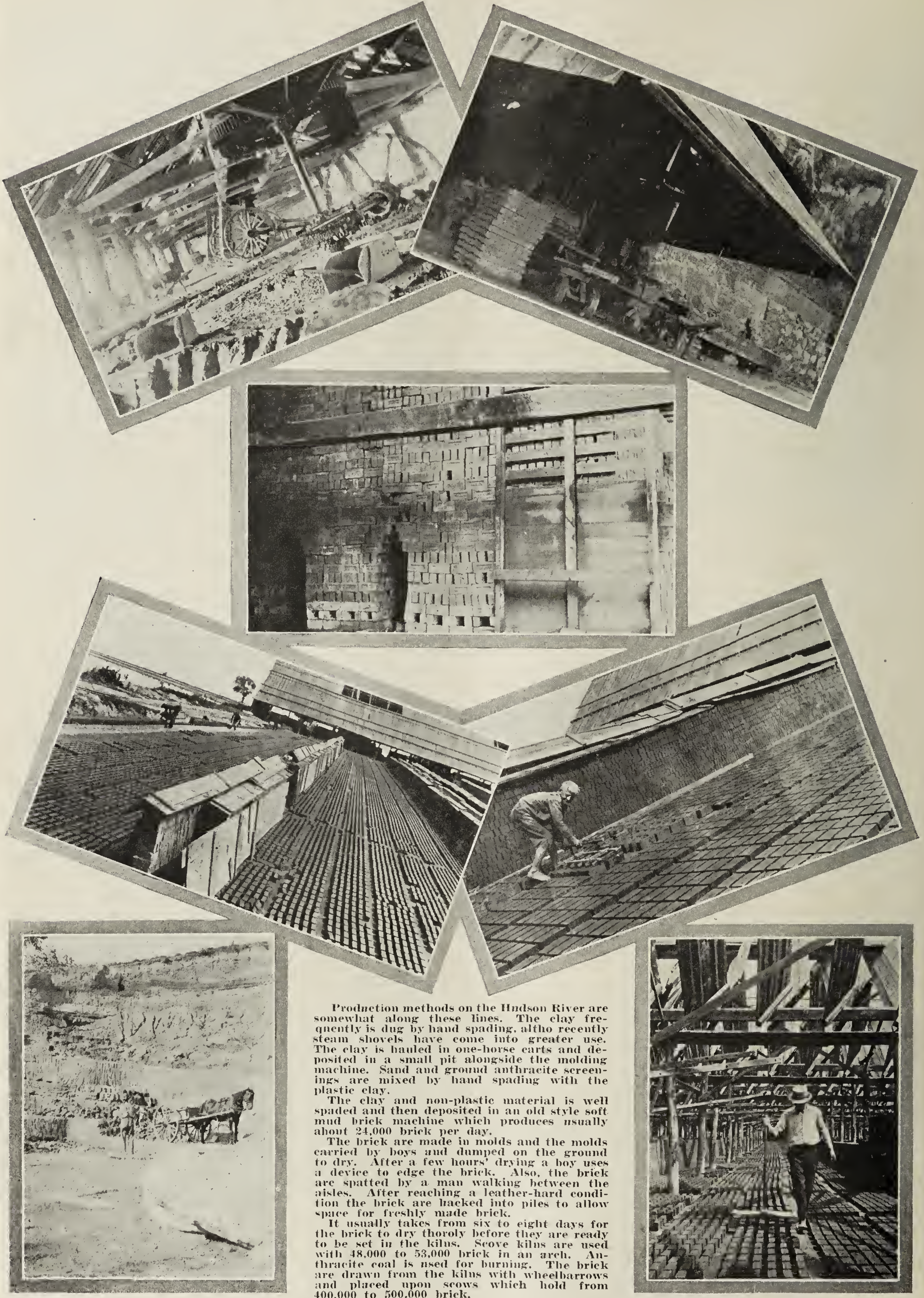
GEORGIA AVERSE TO NEW RAIL RATES

No action on the part of the Interstate Commerce Commission in increasing freight rates has ever created such wide-spread opposition in the South as the commission's recent granting of authority to railroads operating thruout the district to increase rates on brick and clay products, practically the whole industry in the affected area having combined its forces in an effort to bring about suspension of the new schedules, which were announced to become effective on August 15. Not only have the leading brick and clay products manufacturers thruout the section officially voiced their disapproval of the increased rates, but the public service commissions of some of the states, including both the Georgia and the Alabama commissions, have filed official petitions requesting the suspension of the schedules, on the grounds that the increases are entirely too large and will have a serious effect on the industry in the South.



From Top to Bottom These Pictures Show:

1. Dry Pans at the Midvale Plant. 2. The Poidometer Installation at the Newcomerstown Plant Which Automatically Measures Clay and Iron Filings. 3. Unusually Flat Crown Kiln in Use at Robertsville Plant. 4. An Opportunity for Advertising Is Afforded by New Buildings Which the Company Does Not Overlook.



Production methods on the Hudson River are somewhat along these lines. The clay frequently is dug by hand spading, altho recently steam shovels have come into greater use. The clay is hauled in one-horse carts and deposited in a small pit alongside the molding machine. Sand and ground anthracite screenings are mixed by hand spading with the plastic clay.

The clay and non-plastic material is well spaded and then deposited in an old style soft mud brick machine which produces usually about 24,000 brick per day.

The brick are made in molds and the molds carried by boys and dumped on the ground to dry. After a few hours' drying a boy uses a device to edge the brick. Also, the brick are spatted by a man walking between the aisles. After reaching a leather-hard condition the brick are hacked into piles to allow space for freshly made brick.

It usually takes from six to eight days for the brick to dry thoroly before they are ready to be set in the kilns. Scove kilns are used with 48,000 to 53,000 brick in an arch. Anthracite coal is used for burning. The brick are drawn from the kilns with wheelbarrows and placed upon scows which hold from 400,000 to 500,000 brick.

General View of the Jova Brick Works, the Most Up-to-Date Plant on the Hudson River.

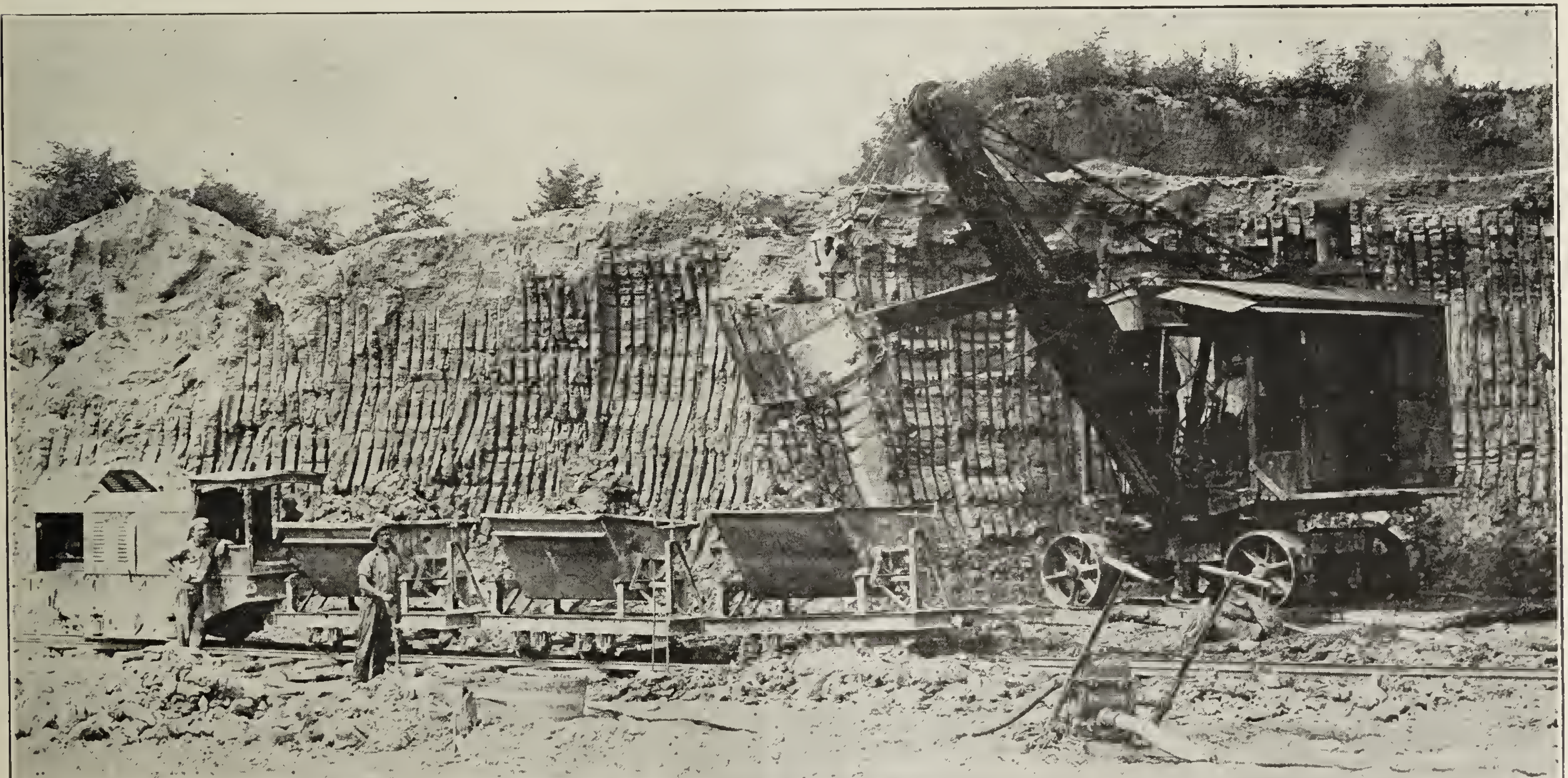
A Revelation on the Hudson River

A Description of the Latest Equipment and Methods of the Most Up-to-Date Plant in the Hudson River District Which Has in It Many New Features of Amazing Interest

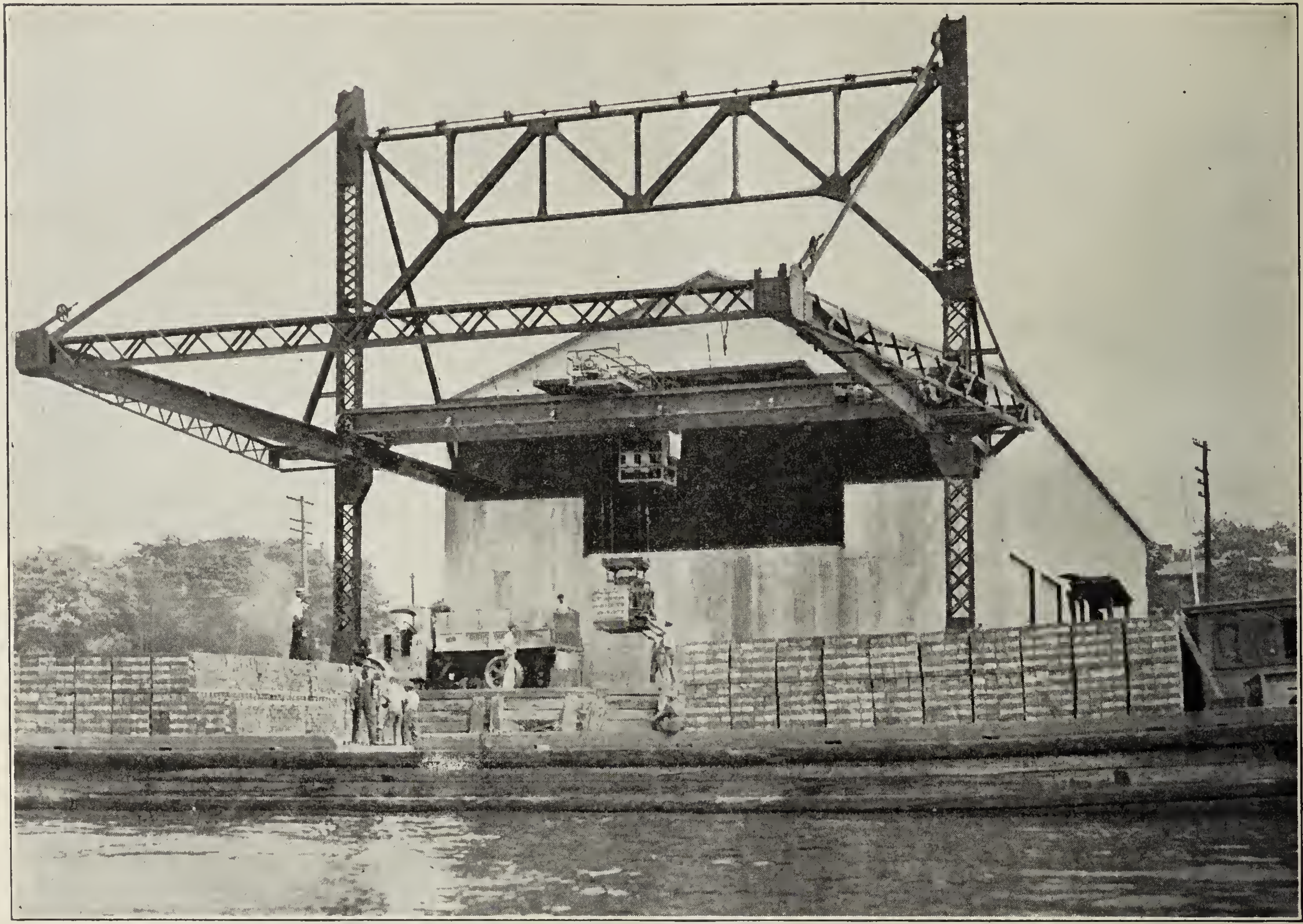
YOU HAVE HEARD a great deal about the Hudson River brick manufacturers. You have heard of them being hounded and persecuted as "vicious combinations restricting output and raising prices" by a publicity seeking lawyer in the courts of New York. You have heard of them being in a class by themselves in their antiquated methods of manufacturing—in their unusual methods of shipping—in their peculiar methods of merchandising—and in their general narrow business personalities.

Perhaps a fleeting glance from the train window as you pass the many brickyards which are scattered along the New York Central Railway, paralleling the Hudson River, has influenced your impressions.

If you have ever actually taken the time to visit any of these plants you will both sympathize with and deplore the methods employed by the large majority who are holding fast to primitive methods. Many have done little or no investigating of modern methods of reducing their manufacturing costs. A criticism which has been directed towards Hudson River brick manufacturers as a class, and in which



Pit View Showing the Bank. The Clay Is Soft and Loaded by the Shovel into Side Dump Cars. Cars Are Handled by Minster Gasoline Locomotive.

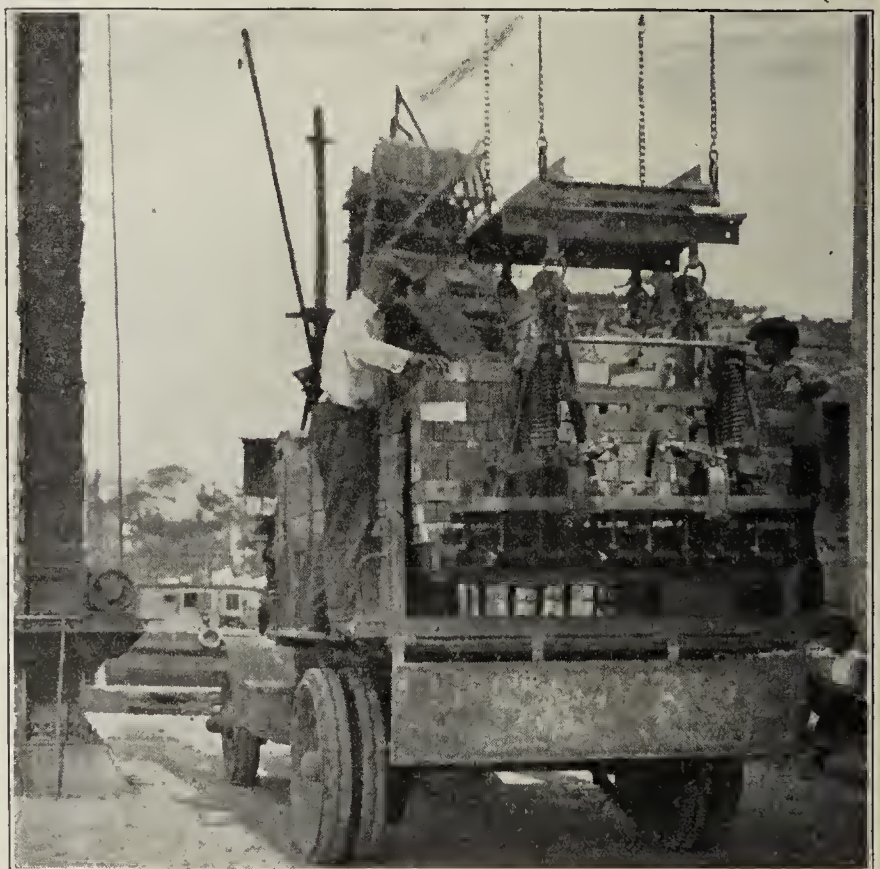


This Photograph Shows a Mechanical Brick Unloader Taking Brick from a Typical Hudson River Brick Barge Holding Over 400,000 Common Brick. This Marks the First Step in Mechanical Handling of Brick in the New York Market. It Probably Means That Before Long All Brick Will Be Mechanically Handled in New York Docks. Most Important, However, It Portends the Adoption of Mechanical Setting of Brick in the Kilns at the Plants.

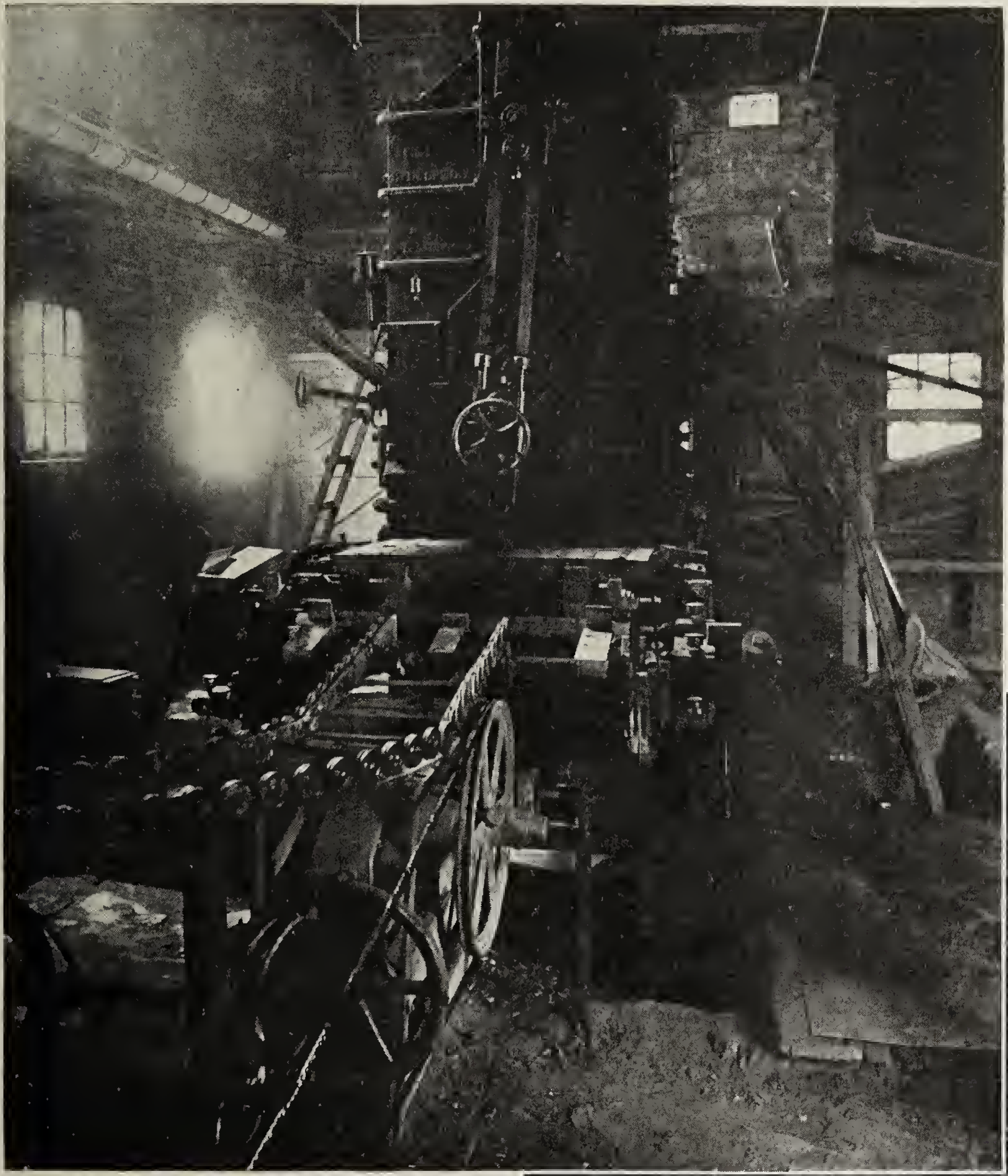
there is undoubtedly a great deal of truth, is their seeming lack of initiative and progressiveness.

On the other hand, you would note that nature has been very kind to them in supplying practically an inexhaustible supply of good clay and sand conveniently located to the brickmaking plant and of such close proximity to the river

A Detail View of the Brick Unloader. Those Who Are Familiar with Brick Setting Machines Will Recognize the Principle on Which This Equipment Operates.



The Machine Can Unload from Barge to Storage or from Barge Directly into Trucks. From the Storage the Brick Are Also Handled by the Machine.



The View on the Left Above Shows a Clark Tructractor Which Is Used for Hauling Coal, Brick Bats, Ashes and So Forth. This Equipment Has Proved a Great Time and Labor Saver.

* * *

Above Right — Williams Crusher, Screens and Storage Hopper Is Enclosed in the Structure Here Shown. This Housing Removes Much of the Disagreeable Dust Which Is a Necessary Evil on a Clay Plant.

Above Is Shown a Picture of the Nine Mold AutoBrik Machine on the Jova Plant. It Turns Out on an Average of 83,140 Brick Per Day.

On the Right Is a Picture of the Steam Dryer Which Has Supplanted the Old Open Air Method.

that recognized and tried labor and cost saving equipment can be conveniently installed without loss of space, between the raw material point and the shipping point. The clay is of excellent quality for the manufacture of soft mud and common building brick, which brick predominates in the New York market. It is easily handled by the clay machinery, can be easily and safely dried and has a most satisfactory factor of safety in burning.

The above description would probably be a representative and composite view of a majority of persons with whom you might discuss the subject of the Hudson River district—but if you have been in the section recently you will note that some remarkable changes are taking place.

Barber-Greene Portable Conveyor Used to Unload Coal from Hopper Bottom Dump Cars.

Big Changes in Methods

Automatic brick machines, power shovels, industrial locomotives, industrial trucks, clay preparing machinery, artificial dryers, and so forth, are and have been coming in during the last two years and the author is of the opinion that this is just the beginning of a movement which during the next few years will grow into eventually revolutionized manufacturing methods on the Hudson River.

What has caused this change?—the reader will ask. The question is hard to answer concretely. Rising costs, shortage of labor and labor indifference undoubtedly have had a great deal to do with it. But what the Hudson River district really needed was a leader who would show the way.

A leader it has—in the Jova Brick Works at Roseton, N. Y. This firm is recognized as operating the best plant on the Hudson River. Its competitors acknowledge it!

The Jova Brick Works were started by J. J. Jova (the name carries the Spanish pronunciation—Hova) way back when the Hudson River district produced more common brick than the rest of the brick plants in the United States combined. At his death his eldest son, H. J. Jova had thrown upon his shoulders the task of running the "yard." This he very capably did. Later his brothers, J. L. Jova, who is now manager of production, and Edward Jova, who is now treasurer and in charge of the sales offices in New York City, joined him in the operation of the yard.

Former Process

Until a few years ago this company had yards scattered along the banks of the Hudson River near Roseton. Fourteen of the old type soft mud brick machines (the only machinery on the plant) were plugging away every day in an attempt to turn out a season's production of forty million brick. At that time the payroll averaged from 325 to 350 men. And these men with their bone and muscle and with the aid of 38 horses toiled during the brickmaking season to supply Gotham with brick.

In February, 1921, this firm installed the first automatic soft mud brick machine to have been placed on a Hudson River yard. It was a seven brick AutoBrik machine. In a short time it developed that the AutoBrik machine could easily handle eight brick to the pallet by simply changing the clod cutter, or die, and the molds. The following year a nine mold AutoBrik machine was installed. These two AutoBrik machines now produce what the fourteen old machines formerly made.

Machines Have Big Capacity

An average of 83,140 brick is being made on the nine brick, and 70,760 brick on the eight brick AutoBrick machine every day.

A Thew gas shovel, Erie steam shovel, clay cars and two Minster industrial locomotives now take the place of the operations formerly done by hand digging and horses and carts. As stated before, the two AutoBrik machines take the place of 14 old style brick machines. Martin steam pipe rack brick dryers are used.

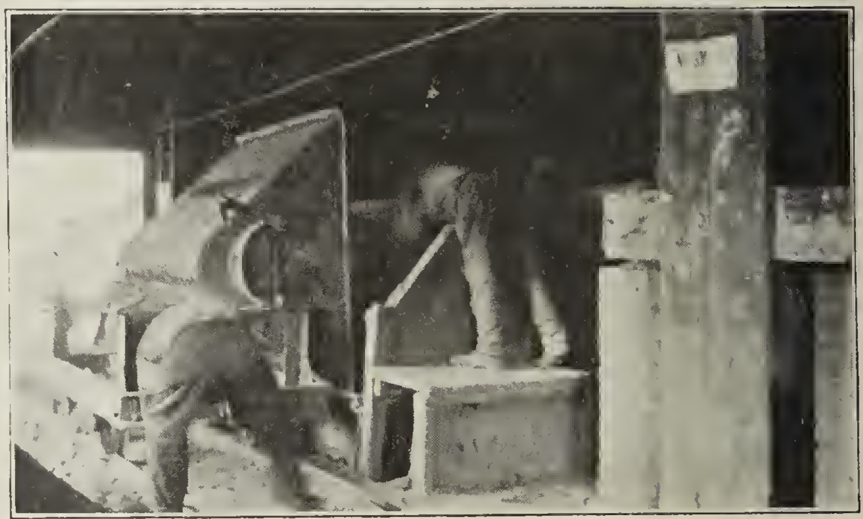
Savings Effected

A Williams pulverizer is employed to crush brickbats and to supply a ground dry grog to add to the brick. This is dumped together with the coal and clay into a heavy duty granulator, which automatically feeds the clay onto a steel frame belt conveyor and thence into the AutoBrik machine.

A Barber-Greene portable coal unloader is used to unload coal from the cars and two Clark tructractors are in constant use doing many miscellaneous tasks on the plant. The Clark tructractors have saved, according to Mr. Jova, three men, three horses and three horse carts each. They can be moved around anywhere and turned on a small area of ground.

By means of the above equipment and without reducing the production a bit, the Jova Brick plant has reduced the number of horses required from 38 to 8 and the number of hands required from 325 to 350 down to 140 men!

One of the most recent improvements made on this plant is the installation of the Penfield system for unloading barges. This has been installed at the company's new dock at Elm St., Astoria, Long Island. The Jova Brick Works is now successfully unloading brick in large units by use of this machine. Three units make a truck load of 3,504 brick. The successful operation of this loading machine portends the installation of a Penfield setting machine for placing the dried brick into the kilns at the Roseton plant.



This Shows Clay Being Dumped into the Disintegrator.

More Improvements Contemplated

Still further improvements on the plant are contemplated. Every effort is being made to make the production of brick as mechanical as possible and thus eliminate as much of the manual labor as is practical. To the Jova Brick Works belongs a great deal of credit for its forward strides in production methods. It is paving the way for a revolution in production methods on the Hudson River.

SPENT BILLION FOR ROADS IN 1922

Thomas H. MacDonald, Chief of the United States Bureau of Public Roads, gave some indication of the magnitude of the country's road improvement program at the 20th annual convention of the American Road Builders' Association held in New York recently. Mr. MacDonald said in part:

"Long strides have been made in improvement of roads in the United States but the building program of the country has been scarcely dented. The federal government gives a little more than six per cent. of aid to States and localities in meeting the expenses of improving roads. Since 1916 the Bureau of Public Roads has undertaken a program of 180,000 miles of road improvement help.

"Thruout the United States last year a total of $976,000,000 was spent by the federal government, the states, counties and municipalities in building and improving roads. There are 2,800,000 miles of roads in this country, of which 2,500,000 miles remain to be improved."

* * *

87,457 NEW FREIGHT CARS THIS YEAR

According to a report of the car service division of the American Railway Association, the total number of new freight cars installed since January 1 was swelled to 87,457 with the placing in service of 8,217 new cars during the first 15 days of July.

* * *

Future of New York Clay Industry Threatened

SEEKING TO LEARN why there is such a pronounced lull in new building projects between finishing-up work of last winter and spring jobs and the release of great volumes of big commercial building projects, The Dow Service uncovered what appears to be a revival of the attempt made a quarter of a century ago to inject "Big Business" methods into the clay products and allied building material industries supplying the New York territory.

The manufacturers of clay products and allied building materials say prices will not come down. They point out that the demand for commercial and institutional building will last longer than the housing movement, which, at best, is only in temporary abeyance.

What Are Manufacturers Doing?

The investors have asked what is being done to meet this future demand that promises to exceed all previous material requirements.

The manufacturers say they are doing the best they can, but the users of building materials do not learn of any general plant expansion, capital increases or any other tangible evidences of taking care of the public's needs.

These building projectors wonder if the building material manufacturer plans to play a safe course that will prevent over-expansion for him, but while doing that, letting the building public into another and still more intricate price trap next year and the year beyond, ad nauseam.

West to Come Into New York Market

These are the big conditions that have stirred up the financial interests of New York. Another big factor is the aggressive work of railroad freight agents in opening up outlets for western clay products in this city. These big factors think far more of lower prices than closed shop rules or territory rights regarding the use here of building materials and equipment made outside of New York. These investors are keen enough to see that if they gain control of the Hudson River brick manufacturing industry they can have a dominant voice as to whether certain commodities, appliances or equipments now barred, will be used here.

25 years ago, when Wall Street studied a similar problem, brick was selling at an average of $4.53 a thousand, wholesale. Today the same brick is selling at $21 a thousand. The deal almost went thru then, even with brick selling so low and the future demand far less certain.

Clay Brick in Danger

A program such as contemplated involves the scrapping of a zinc mine in Sullivan County, turning it into a quarry and, after extracting the minerals, using the slag residue in the manufacture of front brick of a color, texture and bearing strength of rather surpassing degree. The slag, containing some metal, fluxes into the clay producing a cheap and durable brick.

It is planned to produce terra cotta fireproofing material, sewer pipe, conduits, and so forth, utilizing abandoned brick plants all along the river and absorbing, incidentally, some of the largest. At New York, the present costly hand unloading will be supplanted by machinery. Two such equipments are now operating, one at 101st Street and East River, and the other in Long Island City, demonstrating that modern durable brick, it is said.

* * *

PACIFIC ASSOCIATION WILL TACKLE DRYING PROBLEMS

The youthful but enterprising and progressive Pacific Northwest Clayworkers' Association will hold its summer meeting at the Northern Clay Co., Auburn, Wash., on August 25. An intensely interesting program has been arranged and it is aimed to cover thoroly the subject of dryers and drying. The tentative program includes the following papers, many of which appear to be especially worthwhile:

1. "Clay and Water—Marriage and Divorce," by Hewitt Wilson, secretary of the association and connected with the University of Washington, Seattle.
2. "Commercial Drying Methods and Dryers for Clay Wares," by W. E. Lemley, general superintendent, Denny Renton Clay & Coal Co.
3. "The Martin Steam Pipe Rack Brick Dryer and the Boss Drying System," by S. Geijsbeek, Geijsbeek Engineering Co.
4. "The New Double Deck Brick Dryer at the Builders' Brick Co." F. T. Houlahan, Builders' Brick Co.
5. "The Carrier Humidity Dryer for Terra Cotta." This will be a demonstration by Paul S. MacMichael and A. Lee Bennett, Northern Clay Co.
6. "Heat Losses and Control, or Where Your Money Goes," by Hewitt Wilson.

In addition to the reading of these papers time will be devoted to round table discussions of drying problems and every clay products man is urged to bring to the convention the story of his dryer. Following the afternoon session there will be a dinner which will give the delegates an opportunity to become acquainted. Following this there will either be a continuation of the program or a showing of the new United States Bureau of Mines film, "The Manufacture of Refractories."

* * *

How to keep track of supplies and repair parts will be told in next issue.

A Salesman in Every Town

Is the Aim of the Binghamton (N. Y.) Brick Co. as Told in the Following Personal Interview with C. P. Austin, Secretary, by Brick and Clay Record's Correspondent

Wm. Crawford Hirsch

"A SANE BUSINESS POLICY for the manufacturer of burned clay products has at its very cornerstone the principle of 100 per cent. teamwork with the dealer," was the opening expression of C. P. Austin, secretary of the Binghamton (N. Y.) Brick Co., Inc., to Brick and Clay Record's eastern staff correspondent, who went to Binghamton for the express purpose of obtaining at first hand an insight into the marketing methods of this company.

There are manufacturers with larger plants and output, but there is none the United States over who has made a more intensive study of the line of least resistance for burned clay products into consumption than has Mr. Austin. He knows the dealer and the contractor, not from hearsay or description by others, but from personal contact. In 1914 he traveled up and down Pennsylvania for the Patton (Pa.) Clay Manufacturing Co., and later extended his field into New York. He knows the difference between the conditions surrounding the building supply trade in Pennsylvania and that in New York, and at one time the two markets were as different from one another as tho Pennsylvania was France and New York, England.

Company Organized in 1917

The Binghamton Brick Co. was organized in 1917, but for two years after that Mr. Austin's interest was centered in the success of the A. E. F., of which he was an efficient unit. Immediately upon doffing his khaki Mr. Austin assumed the perhaps less spectacular, but fully as strategic post of sales general of the Binghamton Brick Co. During the four years that have since passed Mr. Austin's workdays have been one uninterrupted liaison with the battlefield where orders for burned clay products mean victory and their loss defeat. When not receiving reports from one of his salesmen over the telephone, he is certain to be found giving hints to some dealers on how to land an order for brick for a certain job and to prevent lumber or concrete from being selected as material. This brief word picture of the personality of this "at it" and "over the top" he-man was necessary by way of introduction before letting Mr. Austin have the floor.

Hundred Per Cent. with Dealer

"One hundred per cent. teamwork with the dealer," he said, "has as its aim 100 per cent. dealer distribution, but this is an ideal not completely attainable amid prevailing trade conditions. The all-important factor is that we strive for this ideal. We make it a rule to give the dealer every possible help to sell brick and other burned clay products; we furnish him even advance information of contracts to be let in his territory that he might possibly not have heard of. We supply him with sales helps in the form of abundant samples, arguments that he can use in advancing the cause of burned clay products as against other building materials; we get together with him when it comes to meeting competition by way of prices; we send our salesmen into his field to work as his representative in closing sales where we can be of assistance; in short, we absolutely make the dealer's interest our own,—but, if we find that a dealer in a certain locality is boosting the lumberman's or the cement man's game to the detriment of brick, if we find that the dealer works against our industry rather than against the Binghamton Brick Co. individually, why, then we have no pangs of conscience in selling direct to the contractor.

Seldom Ship Direct

"But we much prefer to work hand-in-hand with the dealer, and pay him his profit, even tho, as happens at times, in exceptional cases, of course, we not only ship direct to the building site, but also finance the transaction."

Fostering between the dealer and the Binghamton Brick Co. the sort of relationship which exists between partners, is the subject nearest to Mr. Austin's heart, but having laid down this principle, he recognizes and admits that cases will come up where it is impossible to apply it.

"A sales policy," he said, "must be so framed as to be an asset. When it becomes so rigid that sales would be lost if it were adhered to blindly, it becomes a liability. Our sales policy is to protect the dealer, but for all that each and every case must be decided upon its own merits. A hard and fast rule to turn down any business that does not come thru a dealer would simply result in hampering distribution of our products and very frequently in our handing over the field to building materials other than burned clay products.

Charles C. Austin, Treasurer, and Clarence P. Austin, Secretary, of Binghamton Brick Co. This Company Is Promoting a Most Remarkable Dealer Campaign.

"Knocking" Is Industry's Ulcer

"We go so far as to say that we will not sell direct to a contractor, if there is in the territory a dealer who will work with us, but we will not go to the absurd extreme that in the absence of such a dealer we will refuse to sell to the contractor or any one else who may want to buy our product.

"The ulcer from which the industry suffers is that the dealer who handles a certain line of brick will 'knock' the other fellow's brick, forgetting in his greed that the effect of his criticism on the building public is to lower the appreciation of brick in general. We are no more in business for our health than any other manufacturer, but just because we are after every dollar that is rightfully ours, we say to our salesmen: 'Get orders for our brick and other clay products. That is what you are being paid for. Remember, however, that it is a hundred times better for you and for us if some other fellow sells a bill of clay brick for a job than if concrete brick is substituted. We lose by "knocking" clay brick, no matter who makes it.'

View of Binghamton Brick Co. This View Is Not Especially Good But Is the Best Available.

Is for Building Supply Associations

"The building supply dealers' organizations are doing a wonderful work. I am with them and for them every time, but it is deplorable that some men can not keep apart their individual business interests and those of the association to which they belong. A dealer, prominent in association activities, who handles a certain line of brick, loses an order to another dealer who handles a different line of brick. As a business man he is peeved, but, strange to say, he is not so much peeved at his successful competitor as he is at the manufacturer who supplies the latter with brick. Not infrequently such antipathies are carried into the association atmosphere, where they are decidedly out of place and emphatically unfair. Men go into a fraternal or social organization, and are able to divest themselves of their personal prejudices in the conduct of the affairs of such societies, but in trade association affairs many are unable to distinguish between their individual and the trade's interests.

Judge Each Case on Own Merits

"Perhaps an outstanding illustration for the necessity of judging each case on its own merits is furnished by the dealer who, in addition to being a dealer, is also a jobber, and sometimes a contractor or speculative builder. We do not look upon the jobber as an essential link in the chain of distribution; we believe burned clay products should move from the manufacturer to the dealer, and from the dealer to the contractor or builder. Now, where we are confronted with the problem of protecting a dealer who is also a jobber, we are compelled to pass judgment as to whether the pending business is to be credited to the man's activities as a dealer or as a jobber. If we decide that he is acting in the latter capacity, we prefer, if it is possible, to extend protection to the dealer to whom he intends to sell."

It may be well for a better understanding of the Binghamton Brick Co.'s policies to state that a complete line of burned clay products is handled. At the Binghamton plant the output consists of 75 per cent. of face and 25 per cent. of common brick. A very small amount of paving brick is also produced here. At the company's Horseheads plant the production is entirely common brick. The Lock Haven plant's output consists of face, and the product of the Patton's Clay Manufacturing Co.'s plant, which is marketed thru the Binghamton Brick Co.'s organization, consists of sewer pipe, wall coping, flue lining, and kindred clay products. In addition, the Binghamton Brick Co. handles in the Eastern market the products of certain Western plants, the object being to be in a position to fill orders for any sort of structural clay material, especially so as to be able to satisfy any and every demand for certain colors and textures in clay brick.

Keeps 5,000,000 Brick in Stock

Of the company's sales of common brick 80 per cent. is distributed within a radius of 150 miles from Binghamton. At Binghamton, adjoining the plant, is a storage shed with a capacity of 5,000,000 brick, altho at the time of the visit of Brick and Clay Record's correspondent only 100,000 brick were in stock, due to the extraordinary pressure of the demand on the company's manufacturing facilities. The company practically stocks at this storage shed the brick supply of Binghamton, Johnson City, Endicott and other neighboring cities, the dealers in these places calling with trucks for their requirements as they need them. Other burned clay products, aside from common and face brick, are also stocked here for the dealers' accommodation.

It will be seen from this that the Binghamton Brick Co.'s policy of distribution is based on the solid foundation of a thoro coverage of the home market and the territory adjacent to it, but this does not prevent the company from figuring as an active market factor as far south as Greater New York, and toward the West to Niagara Falls and beyond. In fact, geographically the company is in a fine strategic position. With its plants near the New York-Pennsylvania boundary line, it has a veritable empire to draw upon for trade, in New York all the way to the cities washed by the St. Lawrence and the Niagara, and in Pennsylvania the anthracite region and fertile Delaware valley. Branch offices are maintained at several strategic points for the more efficient working of the adjacent territory, so, for instance, at Syracuse and in conjunction with the Horseheads plant, a sales office is also operated, because it facilitates the salesmen's work in and around Elmira, Corning, Bath, and other centers.

Dealer in Every Town Over 500

"We began this year to carry into effect our program of having a dealer in every town of more than 500 inhabitants within our natural territory," said Mr. Austin. "We have met with success in this, and now have on our books 250 dealers whose trade is good for from one to 20 cars of common brick a year and corresponding quantities of face brick and other clay products handled by us. We have four salesmen on the road who are constantly adding to this number. Three of these men travel regular routes, and the fourth man is usually engaged on some special detail. A dealer wires or telephones in that he is hard put to it in landing a certain order, and needs help. We immediately send one of our salesmen to work with him. This salesman may be any one of our four. The other three keep right on covering their routes.

"What do we do for the dealer in addition to this cooperation thru our salesmen?

What They Do for the Dealer

"In the first place, we furnish him samples, as many as he may want, so that he can show the widest assortment, and be himself liberal with prospective customers. We are members of the American Face Brick and the Common Brick

The Binghamton Brick Co. Loses No Opportunity to Advertise Its Products. Here Is an Exhibit Where the Company's Products Are Displayed.

Manufacturers' associations, and we use their promotional literature. Occasionally we send out advertising matter originated by ourselves. Of course, we are only too glad to place on our mailing list the name of any contractor whom our dealers want to reach with literature that will convince him that burned clay products are superior to all other building materials. Whenever opportunity offers, we make an exhibit of our products, not only appealing to and educating the dealer, but also enlightening and attracting the public's consideration toward burned clay products.

"After all is said and done, however, the real sales help that we extend to the dealer is when we sit down with him and figure out how we can land a desirable order for him, usually against big odds. That puts money in his pocket and in ours, and that, I take it, is the strongest possible bond between business men.

Try to Make Dealer Carry Stock

"We do not discriminate between a dealer who stocks our brick and one who sells by sample, but, like all other manufacturers, we strive to make out of the dealer who carries no brick stock one who does. It is only natural that the man with brick in his yard is more intensely after brick sales than one who carries no stock. It takes tact, however, to convert a man who does not stock brick to the advantages that accrue from carrying a well balanced stock at all times. We strive to show him where he is losing numbers of small orders by not having the reputation of always having brick in stock, and where he is losing really worth while business because most of this invariably goes to the man who enjoys the prestige of his community of having brick in his yard. Nor do we make any secret of the advantage that we derive from a dealer stocking brick. We know that when a dealer buys a few thousand brick more for a job than is actually needed, he will piece out the remnant later on so as to have a rounded assortment in his yard. This means the sort of constant demand that is most satisfactory from the manufacturer's point of view, but it is very easy to show the dealer that every time he orders brick from the manufacturer to round out his assortment, it implies that he has made sales of brick and —profits.

"We sell all of our common brick on a delivered price basis, absorbing the freight ourselves. We find that dealers prefer this method to any other."

Knows Freight Rates Perfectly

Here Mr. Austin opened a subject of which he has made an intensive study—that of freight rates as applied to brick. It is one thing to have on hand the tabulated figures covering freight rates to principal points. It is quite another accomplishment to have these rates at your fingers' ends not only for shipments from your own plants, but also for shipments from the plants of any one of your possible competitors for a certain order. When you know these rates by heart, as Mr. Austin does, you are less apt to grope in the dark as to the identity of your possible competitors for a certain contested order. And, in addition to the dealer and the dealer-contractor, and the dealer-jobber, and the pure, unadulterated contractor, Mr. Austin knows his competitors. What is more, he will work with, not against his competitors, in overcoming discrimination or prejudice against burned clay products, so long as they, like himself, subscribe to the principle of fair play in competition.

Some Dealers Slow in Paying

"Some dealers, otherwise first-rate fellows," said Mr. Austin, not with any bitterness, but merely by way of putting his finger on one of the evils of trade practices, "are very slow pay when it comes to settling their brick and burned clay products accounts. I am not referring to the dealer who is honest, ambitious and enterprising, but who is compelled to be tardy in the payment of his bills because he has not yet amassed sufficient capital to enable him to meet his obligations as promptly as he would like to. Such a credit risk is frequently far preferable to an A1 account which has gone to pot by reason of avoirdupois of wealth. Character and ability are greater assets than money, and I have always made it a rule in sizing up the desirability of an account to rate these qualities higher than mere capital. But the slow-pay fellow that I am referring to, is the dealer who, I strongly suspect, pays his cement and lumber bills promptly. I know he pays his coal bills on maturity because we are not far from the anthracite district here, and I know he would get no coal if he did not pay for it promptly. When it comes to brick and other clay products, however, some of these dealers have apparently no compunction about using the manufacturers' funds long after the bills have fallen due.

Manufacturers Might Remedy Situation

"It would seem that manufacturers as a whole could bring the right sort of pressure to bear on these dealers so that this untoward condition would be remedied gradually. We use considerable judgment in the handling of these accounts. We do not permit too strenuous collection methods to undo the good work of our salesmen in develping a dealer's volume of purchases. On the other hand, when we know that a dealer is reaping sizeable profits from the handling of our brick and other products, we make every effort to impress upon him the fairness of according to the brick manufacturer the same treatment that he is accustomed to in his dealings with the coal companies. Brick manufacturers generally are well financed, and, aside from the cost of carrying such slow but good accounts beyond the maturity of invoices, the dilatoriness in settlements causes no inconvenience. The cost, however, must be met, and, if dealers generally understand that the cost of money enters into the cost of brick as much so as do clay and labor, they will see very quickly that it is to their own interest to pay their brick bills on the day they fall due, the same as their coal bills."

Always Looking for New Ideas

Mr. Austin is a thoro believer in educational methods in business as against spectacular strokes. He is always on the alert for new ideas and eager to learn from his competitors either thru direct intercourse or the trade press. Taking his own medicine, he is in a position to pass his knowledge on to others, and his sales force, small as it is, is constantly being made more efficient by the intimate contact he maintains almost hourly by telephone with the four men on the firing line.

"It takes time to make a real salesman out of a man who goes after the dealers' business," he said, "and it takes time to make of a dealer who has been in the habit of covering his home bailiwick in a haphazard sort of a way a distributor who is certain to land 100 per cent. of all the possible brick business in his territory. Our methods, however, have shown that they are fundamentally sound. The small-town dealer may be likened to a captain who knows every man in his company. He knows every man, woman and child in his community. Our salesmen work with him when heavier artillery is needed. Frequently we see from an advance building report that construction of a building is planned in some town where the builder, either a private individual or a municipal body, labors under the idea that an out-of-town architect and an out-of-town contractor are superior to home talent. In such a case we immediately get in touch with our dealer and prepare to fight his battle so that the brick, at least, will be supplied by the home dealer. If there is no other way of getting the business, we will sell to the contractor direct, and hand the dealer his profit as tho he had made the sale.

"I have an all abiding faith that eventually our policy will not only secure us 100 per cent. coverage in the territory which we have staked out, but that even those dealers who today are lukewarm when it comes to a contest between clay brick products and other building materials, will eventually recognize the greater satisfaction and profits that come from sales of clay brick, and that the increase in sales and the displacement of less meritorious substitutes will amply repay us for our missionary work.

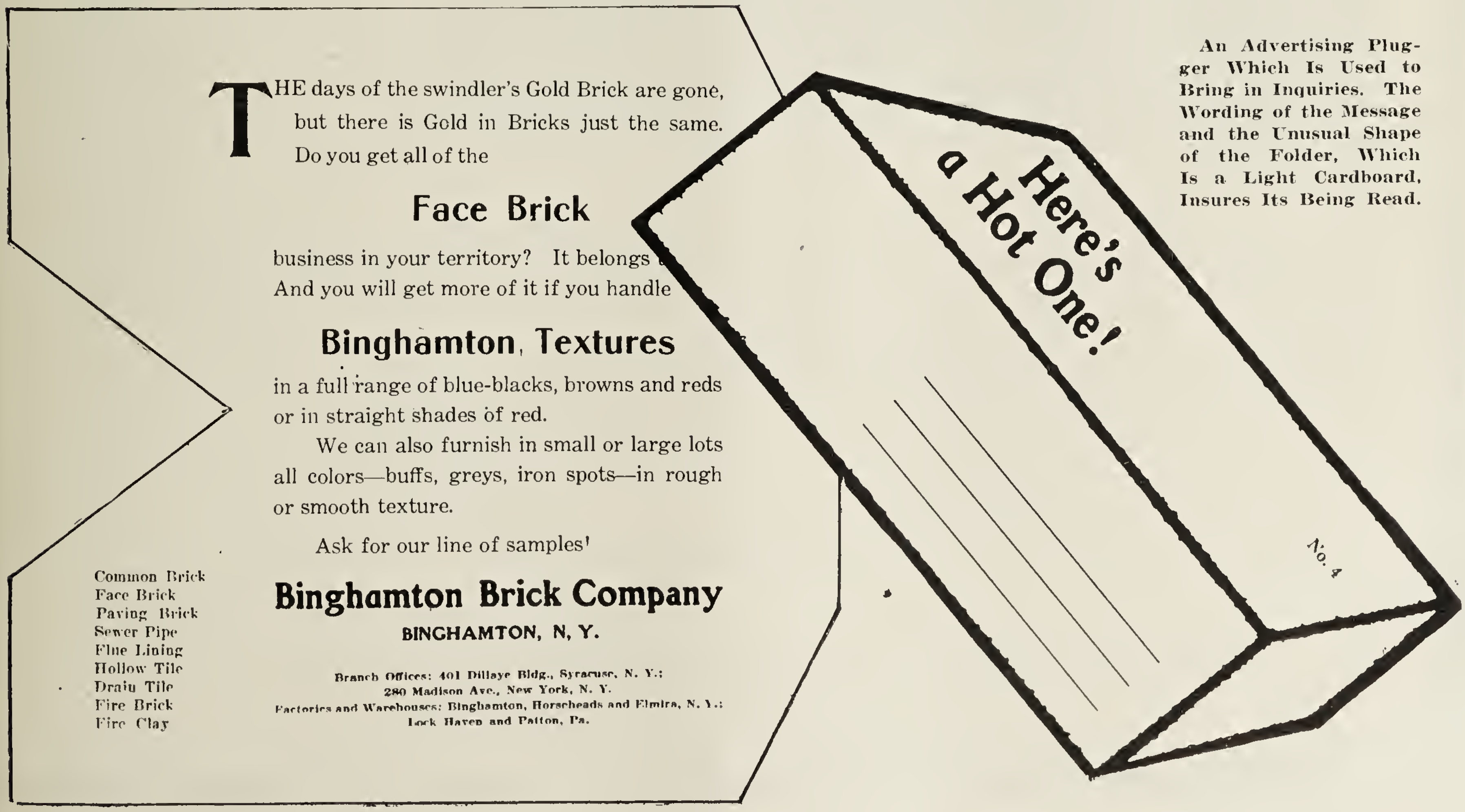
"If there were no dealers, the first task that would confront the burned clay products manufacturer would be to create them. I consider the dealer and 100 per cent. teamwork with the dealer as essential to success for the brick manufacturer as the right clay and kiln."

* * *

CHEMICAL EXPOSITION SEPTEMBER 17

From preliminary indications the Ninth National Exposition of Chemical Industries, to be held at the Grand Central Palace, New York, September 17 to 22, 1923, will equal, if not surpass, past expositions. A big program is being planned and a large exhibit of different products will greet the visitors.

The usual meeting of the American Ceramic Society will be held in conjunction with the exposition on September 19, which will be known as "Ceramic Day." The meeting with the American Ceramic Society probably will extend over several days. An interesting program has been promised.



THE days of the swindler's Gold Brick are gone, but there is Gold in Bricks just the same. Do you get all of the

Face Brick

business in your territory? It belongs

And you will get more of it if you handle

Binghamton Textures

in a full range of blue-blacks, browns and reds or in straight shades of red.

We can also furnish in small or large lots all colors—buffs, greys, iron spots—in rough or smooth texture.

Ask for our line of samples!

Common Brick
Face Brick
Paving Brick
Sewer Pipe
Flue Lining
Hollow Tile
Drain Tile
Fire Brick
Fire Clay

Binghamton Brick Company

BINGHAMTON, N. Y.

Branch Offices: 401 Dillaye Bldg., Syracuse, N. Y.;
280 Madison Ave., New York, N. Y.
Factories and Warehouses: Binghamton, Horseheads and Elmira, N. Y.;
Lock Haven and Patton, Pa.

An Advertising Plugger Which Is Used to Bring in Inquiries. The Wording of the Message and the Unusual Shape of the Folder, Which Is a Light Cardboard, Insures Its Being Read.

COMMON BRICK
FACE. BRICK
IRONSTONE BRICK
FIRE BRICK

MANUFACTURERS OF CLAY PRODUCTS
THE SALT LAKE PRESSED BRICK COMPANY
SALT LAKE CITY, UTAH.

HOLLOW BUILDING TILE
PARTITION TILE
DRAIN TILE
SEWER PIPE

OFFICE PHONE, WAS. 951
YARD PHONE HY. 104

Hadfield-Penfield Steel Co.,
Bucyrus, Ohio.

Gentlemen:

When your Mr. W. H. Merkel called upon us, and explained what a wonderful machine your No. 384 Grinder was and its capacity, together with the remarkable saving made by its installation, we felt if it would accomplish half of what he claimed, we would consider the installation a good investment.

We have had this machine in constant operation for over a year and it has practically paid for itself. It does the work of four standard nine-foot dry pans with ease on about one-fourth the power. We have eliminated ten men and a world of grief, and consider it a real pleasure to be around and watch the No. 384 Grinder devour 400 tons of our hard shale, which is a day's work, without any effort.

During the time this machine has been in operation we have never been called upon to renew repair parts and the machine has more than covered all statements made by Mr. Merkel. We are very much pleased with the design and workmanship of this machine and can say that it is the most satisfactory machine in our establishment.

Very truly yours,

John B. Cohoon
Mgr.

AMERICAN No. 384 GRINDER

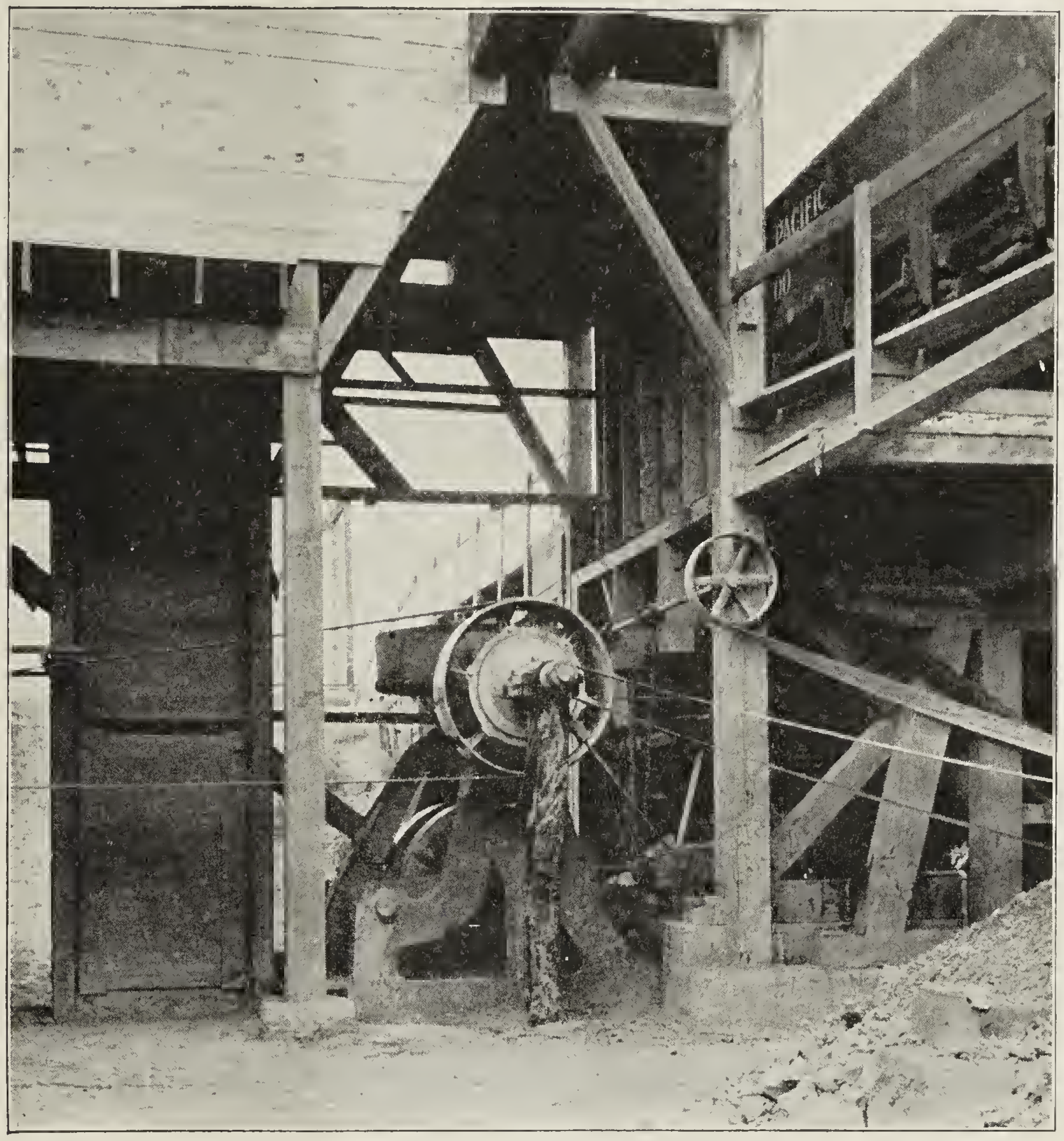
Grinder Efficiency is a Combination of Correct Design and Correct Construction

In The American No. 384 Grinder we have that Combination.

The American No. 384 Grinder is Doing the work of three to six nine-foot pans.

Consider the Capacity — Cost Saving — Quality of Output.

Power Saved — 50 to 70 per cent.
Space Saved—80 per cent.
Labor Saved — 25 to 75 per cent.
Repair and Wear Saved—75 per cent.



American No. 384 Grinder Installed at The Salt Lake Pressed Brick Co. Plant.

A dozen hard headed, close figuring, careful buying, progressive Clay Products Manufacturers have recently bought these grinders, to better their quality, increase their output, and cut their cost.

"Ask the Men Who Know"

Glen Gary Shale Brick Co.,
Reading, Pa.

Citadel Brick & Paving Block Co.,
Quebec, Canada.

Francis Vitric Brick Co.,
Muskogee, Oklahoma.

Gladding, McBean & Co.,
Lincoln, Calif.

Bradford Brick and Tile Co.,
Bradford, Pa.

Clay Craft Mining and Brick Co.,
Shawnee, Ohio.

Salt Lake Pressed Brick Co.,
Salt Lake City, Utah.

The Hadfield-Penfield Steel Co., Bucyrus, Ohio

Builders of the "American Line"

Business Briefs and Trend

JULY CONSTRUCTION DROPPED 15 PER CENT.

July was the second consecutive month of declining construction volume, according to F. W. Dodge Corporation. Total contracts awarded during the month in the 36 Eastern States (including about seven-eighths of the total construction volume of the country) amounted to $315,024,000. The drop from June was 15 per cent.; from July of last year, 22 per cent. However, the July total was about equal to the average July figure for the past four years.

Last month's total included: $124,171,000, or 39 per cent., for residential buildings; $65,159,000, or 21 per cent., for public works and utilities; $40,875,000, or 13 per cent., for business buildings; $31,445,000, or 10 per cent., for educational buildings, and $26,019,000, or 8 per cent., for industrial buildings.

Contemplated new work reported during the month amounted to $634,670,000, an increase of 11 per cent. over the amount reported in June.

Construction started in the 36 States during the first seven months of this year has amounted to $2,425,343,100. The lead over the corresponding period of last year is 4 per cent. At the end of June the lead was 9 per cent. While the remaining months of this year will undoubtedly show a large construction volume, it is probable that they will run rather lower than the corresponding months of last year.

* * *

FUEL OIL PRICE MAY DROP

Whether or not the reduction in price of gasoline will be maintained will depend to a great extent on the price of Mid-Continent crude oil, according to authorities in the oil industry. The general belief is that crude oil prices will drop and that the lower gasoline prices will be held at least for several months. A drop in the prices of fuel oil corresponding to the reduction in gasoline prices will most probably be effective soon. Should the expected drop in crude oil prices materialize, fuel oil is almost certain to go down.

* * *

BUILDING AND LOAN ACTIVITIES INCREASE

In the wake of the year's tremendous building activity comes the announcement that building and loan associations in the United States increased their membership more than 1,000,000 in 1922, surpassing the record made in 1921. This information was brought out in the annual report of secretary M. F. Cellarius at the recent convention of the United States league of these associations held in Tacoma, Wash. There are now 10,009 building and loan associations in the country with a total membership of 6,864,144. These associations have assets aggregating $3,342,530,953. The increase in assets during 1922 amounted to $451,766,332, or about 16 per cent. Pennsylvania ranks first in assets and membership and is followed in order by Ohio, New Jersey, Massachusetts and Illinois.

* * *

REMARKABLE TOTAL IN FREIGHT LOADINGS

Loading of revenue freight for the week ended August 4, totaled 1,033,130 cars, a reduction of 7,914 cars from the total of the previous week, but the second highest in railroad history, according to a report made today by the car service division of the American Railway Association. The total was an increase of 190,467 cars over the same week last year and 246,952 over the corresponding week two years ago. While loadings thruout the country increased 22.6 per cent. over last year, the gain in the western district was only 15.3 per cent., while the South showed 17.1 per cent. gain and eastern lines reported an increase of 30.3 per cent., which was partly explained by the coal strike at this time last year. All commodities showed a slight shrinkage in loadings, the decline being noted in merchandise and miscellaneous freight, grain and grain products, coal, forest products, ore and coke.

* * *

EMPLOYMENT FIGURES ENCOURAGING

Figures regarding employment in industry have been made public by U. S. Employment Service, Department of Labor. The report of the Employment Service states, "The survey completed indicates a healthy undertone, and a splendid spirit of optimism prevails virtually thruout the entire industrial field. While July showed a slight increase in unemployment over June in the 1,428 industrial establishments, this increase amounted to only 577.

"In the 14 basic industries, nine showed increase in employment and are as follows: Beverages, 72.0 per cent.; paper and printing, 4.4 per cent.; railroad repair shops, 2.4 per cent.; food and kindred products, 2.16 per cent.; chemicals, and allied products, 0.79 per cent.; lumber and its manufacture,

THE
BOYD BRICK PRESS
"Built Up to a Standard—Not Down to a Price"
FOR THE MANUFACTURE OF

Fire brick and shapes from fire clay, magnesite, chrome, and other materials. Regular 9 in. series, large and small 9 in. series, and tile up to 12x24x4 in. The only mechanical press that has been successful in the production of pressed brick and large shapes from dead-burned magnesite.

High-grade smooth face brick, round edge face brick, and rough texture face brick without addition of complicated special attachments or scratching devices, and common building brick, from shale, clay, and other materials.

Write for Bulletin AB and mention this advertisement.

CHISHOLM, BOYD & WHITE CO.
Office and Works, 57th and Wallace Sts., Chicago, Ill.
Established 1888

0.47 per cent.; iron and steel and their products, 0.44 per cent.; miscellaneous industries, 0.36 per cent.; and stone, clay and glass products, 0.13 per cent., while leather and its finished products showed a decrease in employment of 4.16 per cent.; vehicles for land transportation, 1.78 per cent.; textiles and their products, 1.44 per cent.; tobacco manufacturing, 1.31 per cent., and metal and metal products other than iron and steel, 0.08."

* * *

TRIBUNAL TO SETTLE LAW SUITS

An interesting move has been made by the New York Building Congress toward settling ordinary law suits with a minimum of delay. The Congress has adopted in principle a plan to settle civil disputes between owners and contractors and other differences arising from commercial contracts before a law tribunal instead of going into the courts. This plan was announced by O. B. Towne, who is secretary-treasurer of the American Trade Association Executives. Under the proposed plan, Mr. Towne believes that most cases can be decided within 30 days instead of waiting months and perhaps years for the crowded dockets of the New York courts to clear.

* * *

THE PEOPLE STILL HAVE MONEY

Business in the automobile industry this year has been highly satisfactory and present prospects for its continuance are excellent. Manufacturers expect a good amount of retail sales for the rest of August and for September. Contrary to expectations the seasonal slump has not been as severe as in former years. It is also interesting to note that more cars are being sold in the industrial sections than in the agricultural districts.

"The industry has produced 3,525,000 motor vehicles for the year ending July 31," Automotive Industries says. "In the first seven months of this year it has made 2,344,000 units, an increase of 68 per cent. over the corresponding period last year. While July production, 318,000, was 16 per cent. below that of June, yet it was 29 per cent. larger than July, 1922."

* * *

BRICK IS GAINING IN POPULARITY

Of considerable interest to the industry is the combined report of common brick manufacturers from different parts of the country, stating that they have had appreciable gains in demand for the material in the last few weeks, a marked improvement over that of a month ago.

Chief reason for this, it now appears, is not in commercial, apartment and industrial construction, but in residence work almost entirely for the time being. In fact, manufacturers are just realizing, it would seem, that the real field for their output, which is housing, is just coming into being.

It has been conservatively estimated that if each state should build an average of 1,000 brick houses, not only would this mean an outlet for a billion and a half of brick, but would mean a gain of 25 per cent. for this construction over 1922. In addition, housing construction offers a steady and growing outlet for brick, while big job work, which has generally been the lure of the manufacturer and distributor, has shown high and low marks thruout a year or several years, and the product of the producer has been regulated accordingly.

* * *

PROSPERITY CONTINUES IN SOUTH

Construction work is beginning to assume activity again over the Southeast after a period of dullness during the summer months, and there has recently been a resultant increase in the brick over the whole district, manufacturers and dealers in Atlanta advise. A majority of the plants in the

PLANT BETTERMENT SERVICE

A sincere interest in your problem, together with common sense methods and a broad experience makes this service highly profitable.

Write for details

WALLER CROW, INC.
Engineers
COUNSELLORS IN INDUSTRIAL OPERATION & FINANCE
327 S LA SALLE STREET
CHICAGO

Stop Using Wheelbarrows

and the hand shoveling method to feed your dry pans. Labor is scarce and unreliable. With

ROBBINS
Sectional Conveyors

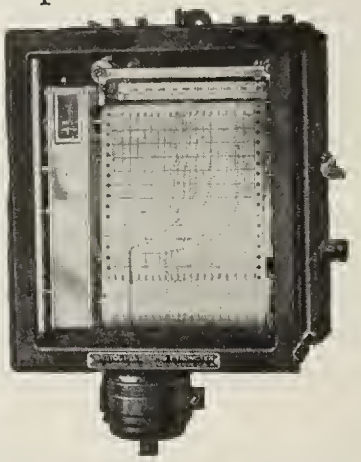
properly arranged, one man will feed your pans better than three or four men can do it by hand shoveling. Give us a chance to solve your labor problems. Reduce your costs and speed up production.

WRITE TODAY

Robbins Machinery & Supply Co.
444 W. Grand Ave. Chicago, U. S. A.
"Machinery for Moving Merchandise"

Aid Your Burners

An installation of Bristol Pyrometers will give your burners a chance to produce first class ware by accurately telling them kiln temperatures.



Avoid the dangers of the too rapid, and the waste of too slow a burn. Equip your kilns with Bristol Pyrometers and be assured of accurate indicating and recording.

Ask for 68-page catalog AE-1401.

THE BRISTOL COMPANY
WATERBURY, CONNECTICUT

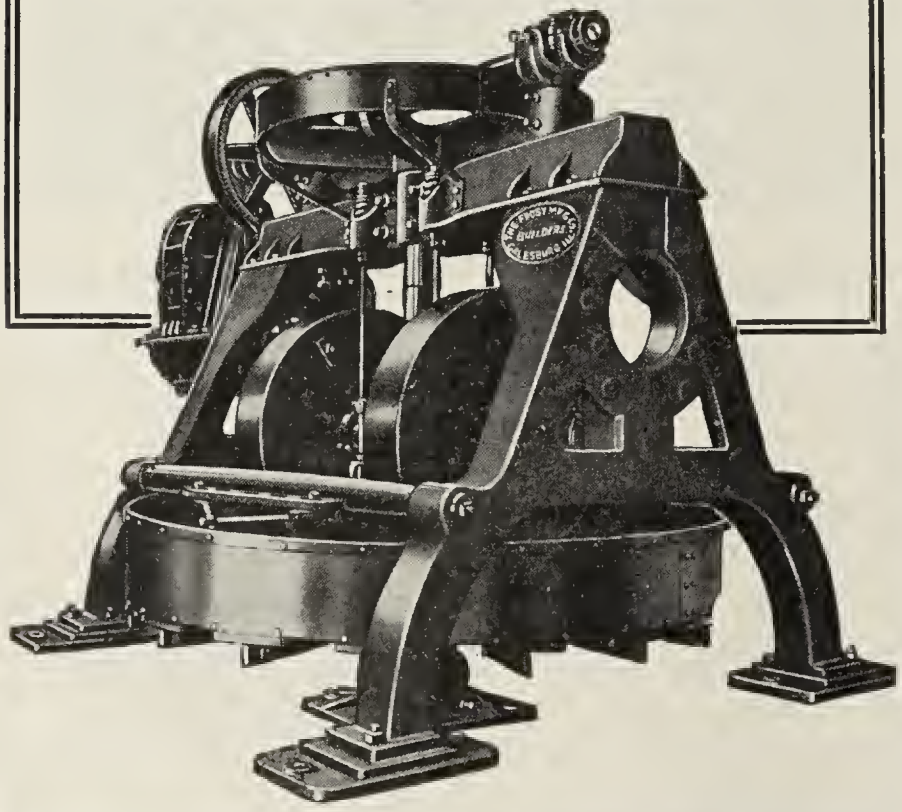
BRISTOL'S

INDICATING RECORDING PYROMETERS

BETTER QUALITY WARE

That is the result when Frost Dry Pans are put on the job.

THE FROST MFG. CO.
GALESBURG, ILLINOIS



QUALITY ECONOMY SERVICE

district have continued to operate thru the summer months on an entirely satisfactory basis, and still are well sold ahead. Within another three or four weeks the brick demand is expected to reach close to the peak established earlier in the year, and an upward tendency in prices is looked for as a result. There have been some declines of late in common brick prices, but as a whole most of the other prices have remained on a comparatively stable basis.

According to the most recent report of the Federal Reserve Bank of Atlanta, issued the early part of this month, the brick industry thruout the Southeast has continued to operate on a scale somewhat above the same period last year, but during June there was a slight decline as compared with the previous month; July figures are not as yet available, but production held up about on a par with June, manufacturers state. Stocks on hand are considerably less than they were at this time last year, as a whole being reported nearly 50 per cent. less due to the good demand the industry has experienced the past few months. Unfilled orders on hand are more than 100 per cent. larger than they were at the same time last year, while the number of employes working in the various plants thruout the district is reported to be approximately 40 per cent. larger than last year. Recent lull in demand because of a slowing up in construction has enabled the plants of the district to lessen their unfilled orders on hand by about 15 to 20 per cent. the past two months, and has also served further to reduce stocks in the yards.

The outlook for the rest of the year is regarded as very good by a majority of the manufacturers of the district, who state they are virtually certain that 1923 will now prove one of the most prosperous years the industry ever has enjoyed in this section.

⁂

MUST TAKE CARE OF WORKMAN

In an effort to call attention to the differences between different states' Workmen's Compensation Laws, the National Industrial Conference Board of 10 E. 39th Street, New York, has just completed an exhaustive report on the medical phase of Workmen's Compensation Acts in the United States. The report pays especial attention to the liability of an employer in supplying medical aid.

The report shows, among other things, that employers, for failure to report accidents to their men, may be fined various amounts, ranging from $10 in California, Delaware and Illinois, to a year's hard labor in Alabama or $2,500 in West Virginia.

⁂

NUMBER OF LABORERS INCREASING

Some interesting facts regarding the recent distribution of immigrants have been made public. There is an increasing tendency among immigrants to remain in this country. From July, 1921, to March 1922, a report of the National Industrial Conference Board shows 241,644 arrivals were offset by 160,918 departures, making the net immigration 80,726. For the same period a year later the arrivals were 373,511 and the departures had dropped to 65,775, making the net immigration for the period 307,736. This occurred in the face of reviving prosperity in Europe.

Complaints from Pittsburgh recently, which told of less than one per cent. of the 1923 immigration quota going there, are borne out by this phase of the report which shows that there is a tendency under the new law to stimulate skilled labor and farming immigration, rather than the unskilled mill worker. Of the immigrants for the period covered above, only 29,191 were common laborers, the remainder being thus classified: Professional, 9,870; skilled laborers, 65,707; farm laborers, 25,072; miscellaneous, 57,838; and unclassified, 120,058.

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

SCHEUSSLER LEAVES A. P. GREEN

H. S. Scheussler, treasurer and auditor of the A. P. Green Fire Brick Co. at Mexico, Mo., has resigned his position to take effect October 1. He will go into business in St. Louis but as he was out of Mexico at the time his resignation was announced no statement could be secured as to his new connections.

N. E. LOOMIS STRICKEN SUDDENLY

N. E. Loomis, 67 years old, general manager of the Mosaic Tile Co., of Zanesville, Ohio, died recently at his home in that city. Mr. Loomis, who was widely known in the clay working industry, went to the garden in the rear of his home and while there was stricken ill. He had been connected with the Mosaic Tile Co. for many years.

WILLIAM F. GEDDES DIES AT 73

William F. Geddes, president of the Denver (Col.) Sewer Pipe & Clay Co., died August 9, in his Denver home, after a prolonged illness, at the age of 73. Mr. Geddes came from Ireland, arriving in New York in 1870, coming to Denver in 1880. Just 32 years ago Mr. Geddes took over the manufacturing plant of the Denver Sewer Pipe & Clay Co. It was a very small affair, but under Mr. Geddes' supervision it grew by leaps and bounds, and at the time of his death it was one of the largest brick and clay plants in the West.

G. S. DAVIES GETS NEW JOB

George S. Davies, formerly of the sales department of the Dover Fire Brick Co., has been appointed district sales manager for the Ashland (Ky.) Fire Brick Co., with offices at 1252 East 55th Street, Cleveland, Ohio. Mr. Davies traveled for the Dover Fire Brick Co. for the past seven years and previous to that time served with the Harbison-Walker Refractories Co. Mr. Davies is also president and treasurer of the Inland Fire Brick Co., of Cleveland, a newly organized corporation. The Ashland Fire Brick Co. has arranged to carry warehouse stocks of fire brick, fire tile and fire clay at the Cleveland address.

DEATH STRIKES W. D. BRICKELL

W. D. Brickell, president and treasurer of the Ironclay Brick Co., of Columbus, Ohio, died at his summer home on the Scioto River, northwest of Columbus, August 6, at the age of 71 years. He had been connected with the company since 1907, when he purchased the controlling interest and took an active part in its management. Mr. Brickell was at one time owner of the Columbus Dispatch, the leading newspaper of Columbus, and was its practical founder about 1876. He was also interested in civic and welfare enterprises and was in a number of other business enterprises. He was born in Steubenville, Ohio, but spent his boyhood in Pittsburgh.

GIBSON TO REMODEL PLANT

W. R. Gibson, a well known clay products man of the South, has gone to Natchitoches, La., where he has been called to aid in the reorganization of the old H. & A. Brick Works. This plant has been shut down for several years and plans are now under way for its reopening.

ATLANTA, GA BALTIMORE, MD. BOSTON DETROIT

PITTSBURGH, PA PHILADELPHIA MONTREAL MINNEAPOLIS NEW YORK CITY

SAN FRANCISCO ST LOUIS, MO TORONTO WINNIPEG, MAN

MORSE Silent Chain Drives are 98.6% efficient for small or large drives. No worry about belt trouble, slippage of power and loss of production where Morse Chain Drives are installed.

Write us if you have a transmission problem. We give engineering service without any obligation.

Drop a Card to the Nearest Morse Engineer

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Largest Manufacturers of Silent Chains in the World

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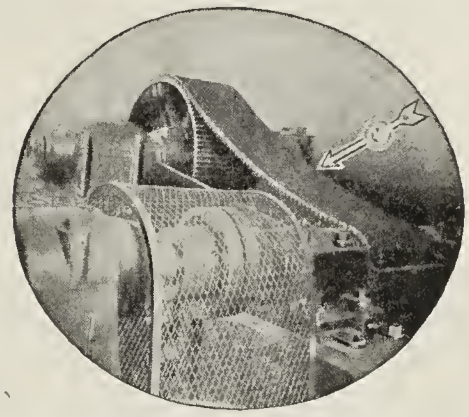

CHARLOTTE, N C. CHICAGO CLEVELAND KANSAS CITY, MO

ELIMINATION OF LOSSES DUE TO KILN GRATE TROUBLES, is the result when CANTON GRATES ARE INSTALLED

Canton Grates will save you about one-fourth on your fuel bills. They will enable your operators to attain and maintain temperatures without excess use of fuel.

It wont cost you to get complete information today and it may mean profit for you. It has to many others.

Write us

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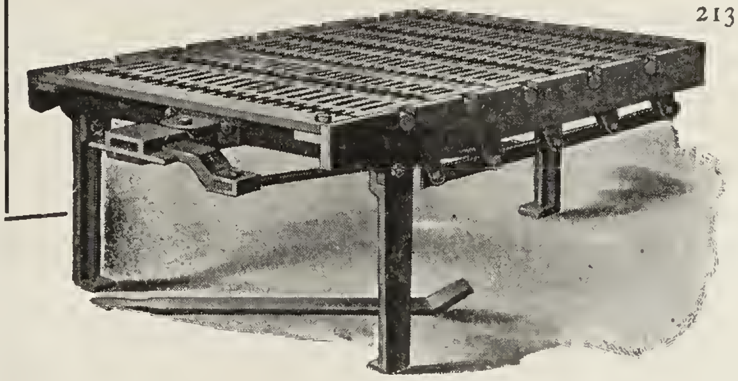


The Canton Grate Co.

1709 Dillon Place, CANTON, O.

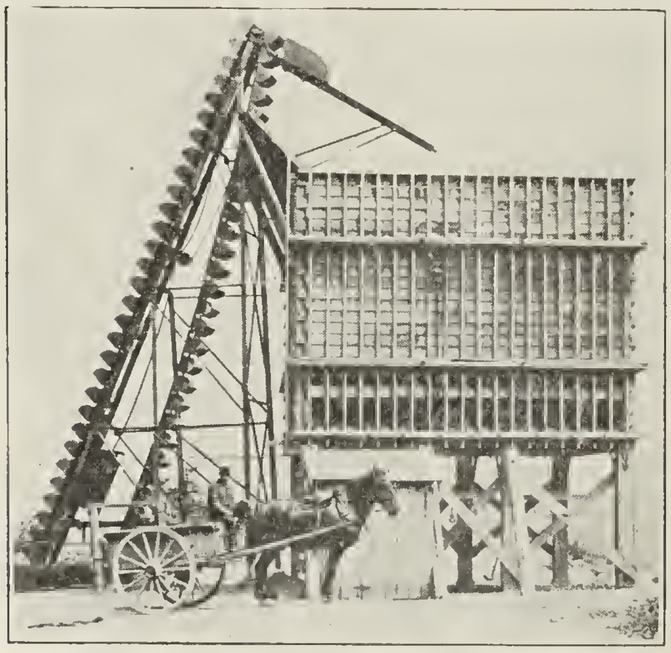
Fans and Blowers

Air handling equipment for every purpose:—mechanical draft, heating, ventilating, exhausting vapors or gases, pressure blowers, etc., of any size or capacity. Forty years' success has established for American Blower products a nation-wide leadership in all branches of industry.

Write for Bulletins

AMERICAN BLOWER COMPANY, DETROIT
BRANCH OFFICES IN ALL PRINCIPAL CITIES
CANADIAN SIROCCO CO., LTD., WINDSOR, ONT.
(322)

American Blower
"Sirocco"
EXHAUSTERS • VENTILATING FANS AIR WASHERS • BLOWERS ENGINES
FOR HEATING • VENTILATING • DRYING •
AIR CONDITIONING • MECHANICAL DRAFT



A Fairfield on the Job!

Fairfield Coal Handling Machinery is preferred by clay products manufacturers everywhere, because it is *dependable* and *economical.*

Write for Bulletin No. 20

The Fairfield Engineering Co.
Marion, Ohio

SHIPPING TILE TO HONDURAS

The Roper-Strauss-Ferst Co., Inc., Birmingham, Ala., is shipping hollow tile to Spanish Honduras, to be used in the construction of a large hospital building.

U. S. REFRACTORIES IMPROVES

The U. S. Refractories Co., San Luis Obispo, Cal., is putting $3,000 into a new dryer that will double the capacity of the plant. It is being thoroly equipped with machinery, rails and other equipment.

LIVERMORE FINDS CLAY DEPOSITS

The Livermore (Cal.) Fire Brick Works is testing out a new clay discovery near at home. The new deposit has been discovered on a ranch in the Tesla district, and comprises a vein about 12 feet thick. Preliminary tests show a silica sand, a low grade clay and a high grade clay. Thoro tests are now being made and it is believed considerable quantities of high grade clay for fire brick manufacture will be discovered.

PUTS OUT NEW BOOK ON TILES

Gladding McBean & Co. of San Francisco, Cal., just published another edition of its handsome and elaborate book entitled "Latin Tiles."

This book depicts the various types of roofing tiles in use in America as well as in the old world. Illustrations are shown of clay tile roofs that have been on their buildings for centuries, not to mention the hundreds of photographs of modern buildings with clay tile roofs thruout the United States.

The publishers of this book have gone far toward educating the public on the beauty of this type of roofing material. It is to be hoped that there will be more of this kind of educational work done in the immediate future.

DECLARES 5 PER CENT. DIVIDEND

A five per cent. cash dividend was declared recently by the Idaho Fire Brick Co., of Troy, Ida. The dividend was based on business from March 1 to July 1. The late import tariff increase has been a big factor in putting the business on a dividend-paying basis. The demand for its product has gradually increased and an extensive business has been built up along the coast. A live and wide-awake management is largely responsible for the company's success.

BARRON BUYS COAL MINE

The Barron Brick Co., of Chicago, Ill., has purchased the Roanoke (Ill.) Coal Co., a long wall mine of 750 tons daily capacity. This mine is electrically equipped thruout, with electric locomotive and coal machine. The plant of the Barron Brick Co., manufacturing hollow building tile, adjoins the coal mine and the raw material used for manufacturing tile is the refuse from the coal mine.

FIRE DESTROYS TILE PLANT

Fire of undetermined origin destroyed the tile plant of L. P. Hartzell at Hoagland, Ind., recently, causing a damage estimated at $25,000. The flames started in the boiler room and fanned by a high wind spread rapidly thru the plant.

OBJECT TO NEW FREIGHT RATE

Brick freight rates proposed to go into effect August 18 by the Chicago & Eastern Illinois Railroad Co. between Evansville and Vincennes, Hazelton, Patoka, Emison, and Decker are objected to in a protest the Evansville (Ind.) Chamber of Commerce has sent to the Public Service Commission. The protest says many contracts in the places named were based on the prevailing freight rates and that to change them would work serious injury. The chamber avers that present rates are adequate and calls for a hearing to determine whether the rates should go into effect as proposed.

FIRE DESTROYS ALGONA PLANT

Fire totally destroyed the Algona (Ia.) Brick & Tile Works on August 2. The machine room and all its contents, the boiler room and other operating buildings were made a total loss. The only thing remaining was the kilns and a few small buildings. The origin of the fire is unknown.

OPEN JOINT SALES OFFICE

The Denison Clay Co., of Coffeyville, Kans., and the Western Clay Co., of Weir City, Kans., has opened a joint sales office at 820 Frisco Building, in Joplin, Mo., with L. B. Denison, Jr., in charge.

PROGRESS TO START SOON

The Progress Pressed Brick Co., Louisville, Ky., expects to start running again within a short time, according to Andrew P. Hillenbrand, head of the company. This was one of the first Lion presses built, and while known as a hydraulic press, it was operated by steam.

LOUISVILLE PLANTS STOCKING COAL

Some of the Louisville, Ky., brick companies have taken advantage of the very favorable coal prices quoted within the past two months to stock their yards with supplies equal to two months running or more. At the present time they could replace their yard stocks at less money, but are buying and consuming the lower priced coal, and letting their yard stocks stand for future needs. Coal is lower today than at any time in the past year and a half. Brickmen in Louisville are not looking for any material advance in prices this winter, but in view of the possibility of car shortage, or severe weather forcing prices, there is a generally expressed feeling that it is wise to lay in a stock to take care of any runaway market period.

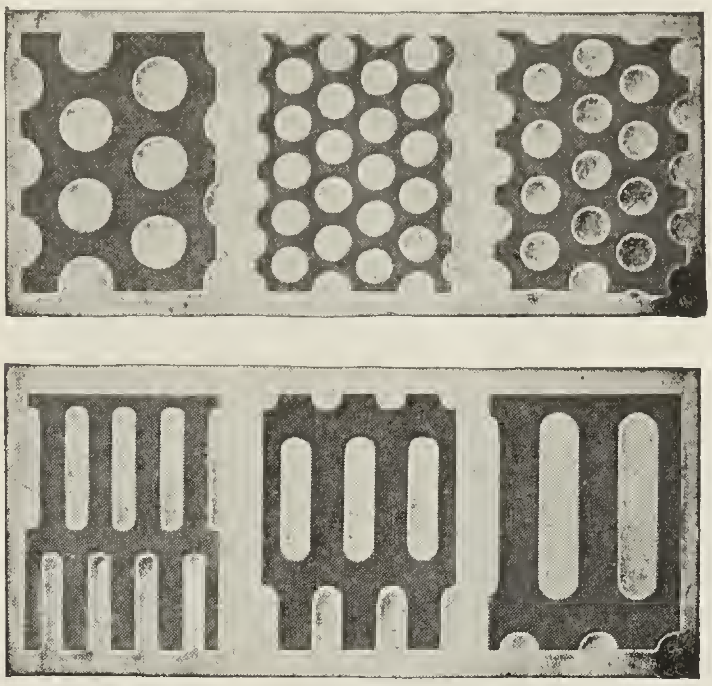
COLBURN COMPANY CHANGES NAME

The Colburn Brick & Tile Co., at Zumbrota, Minn., has changed its name to Gunderson Brick & Tile Co. The officers of the company are M. T. Gunderson, president and general manager; P. E. Flick, vice-president, and H. W. Linder, secretary and treasurer.

SETTLES COAL AND CLAY MINES STRIKE

The strike of the clay miners employed by the Fulton (Mo.) Fire Brick Co. was short lived and was settled as soon as C. O. McNamee, general manager of the company, who was out on a trip, was advised of the strike and returned to Fulton for a conference with the men. The men asked for a wage increase of 15 per cent. and an adjustment of differences on principles, all of which was granted by the company and the men returned to work after being out only a few days. The Fulton plant of the brick company also was among those interested in the cessation of work by Fulton coal miners after their agreement with the local operators had expired August 1. The operators would not sign a new scale until Mr. McNamee returned as the company has a mine in which about 50 of the several hundred miners of Fulton are employed. After his return the coal operators got together and granted the demand of the miners, which was for a contract calling for 10 and 11 cents for digging coal, the same scale that prevailed last year. The local plants will not be affected by any strike that may occur in the Illinois coal fields this winter, because the local miners' union is not affiliated with the United Mine Workers of America and their new contract with the Fulton Fire Brick Co. and other operators here is to extend to August 1, 1924.

Perforated Steel Screens



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All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

Sheets furnished flat or rolled to shape for revolving screens.

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Thereby Producing
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Gives Diversity to Face Brick

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Write Today For Samples and Prices

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AUTOMATIC CAR UNLOADER

Loads or unloads coal at the rate of 30 to 50 tons every hour. Only one man needed.

Let us tell you what other clay plant operators are doing with the Sunbury in saving time, money, and labor.

The Sunbury Manufacturing Co.
Sunbury, Ohio

C AND B CLOSES PLANT

The plant of the C and B Clay Co., west of East Greenville, Ohio, was closed recently. No reason for the sudden suspension was given. The plant employs about 100 workmen and production in recent months has been at capacity.

BUCKEYE CLAY PLANT STOPS WORK

The Buckeye Clay Plant of the McLain Fire Brick Co., at Wellsville, Ohio, has partially suspended operations for at least a month. Altho unable to announce definitely the date of resumption, the plant will start again about the first of September. Slight lull in business and large stocks are said to be causes for suspension.

FACE BRICK PRICES STEADY

Prices of face brick in the Columbus, Ohio, district, have shown very little change in the past few weeks. Face brick are selling from $26 to $37, according to quality, texture and shade. Common brick continue to be in good demand and are quoted from $16 to $18.50 delivered on the job in Columbus.

CENTRAL SHUTS DOWN FOR REPAIRS

The Central Refractories Co., which has headquarters in Columbus, Ohio, has shut down its plant at Shawnee, where flash and red face brick are manufactured, to make some necessary repairs. The company reports increased orders after a lull of several weeks with prospects for the future looking much better than formerly. The plant at Shoeshoe, Pa., which is a hand made fire brick plant, has been especially active, as the demand for fire brick is quite strong.

FAILURE INVOLVES OHIO BRICK CONCERNS

Two brick manufacturing concerns in the central Ohio and Hocking Valley clay manufacturing region have been involved by the failure of the R. L. Dollings Co., a large stock selling concern which had headquarters in Columbus. The R. L. Dollings Co. has taken up the Franklin Brick & Tile Co., of Columbus, and the Burton-Townsend Co., of Zanesville, both of which concerns have become insolvent.

Following the naming of receivers for the Dollings Co., Samuel A. Kinnear, former postmaster of Columbus and Arthur M. Crumrine were named receivers for the Franklin Brick & Tile Co.

George W. Shoemaker, who has been president and general manager of the company reported assets of $110,000, of which $20,000 was in accounts receivable and the remainder in inventory of the property.

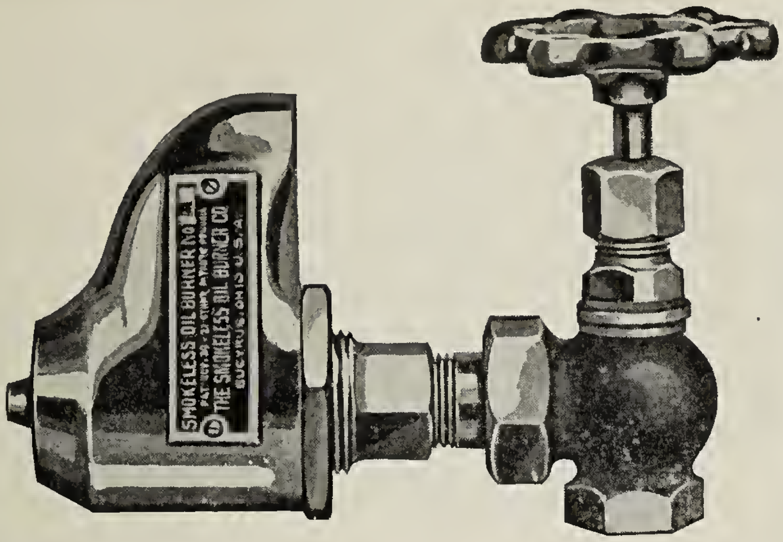
Liabilities were given at $365,000, which it is claimed consisted of $275,000 in long-time notes held by the R. L. Dollings Co., and the International Note & Mortgage Co., a subsidiary, and the remainder in bills receivable and in creditors' accounts.

The Burton-Townsend Co., which has two paving brick and hollow tile plants at Zanesville, is another concern which was involved in the failure. Samuel A. Kinnear and Arthur M. Crumrine were named receivers for this property by the Court and immediately took charge after giving bond.

The figures as to assets and liabilities given by the Burton-Townsend Co. in court were considered worthless and are not being considered. Receivers Kinnear and Crumrine are now making a complete inventory of the assets of this plant.

75,000 CAPACITY PLANT FOR CHESTER, PA.

Announcement has been made of the organization of a brick company with a capital of $250,000 at Chester, Pa. The men who are reported to be behind this project are Major



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"Smokeless Oil Burners have more than met our expectations. Our brick are of excellent color and every brick in the kiln is hard. The more we burn with oil the better we like the system. It saves us from two to three days in burning each kiln and is much cheaper burning."

RESULTS COUNT

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BUCYRUS, OHIO
Complete Oil Burning Systems

Made for maximum service not merely the average

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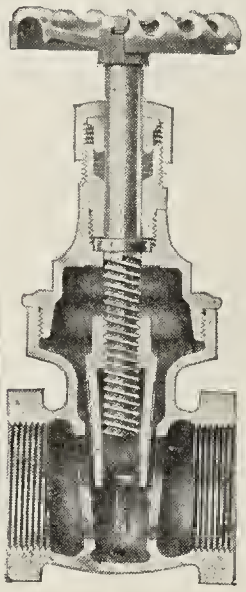
cast on each valve is a mark of identity and a symbol of service. It signifies correct design, and all-around goodness that qualify Jenkins Valves for thoroughly dependable and economical service. You are sure of this permanent valve service in every Jenkins Valve.

Valves in bronze, iron, and steel for all requirements. At supply houses everywhere.


Sectional View Fig. 370 screwed, Standard Bronze Gate Valve.

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Don't tolerate the old type of pot machine on which the operators work side by side and interfere with one another's motions.

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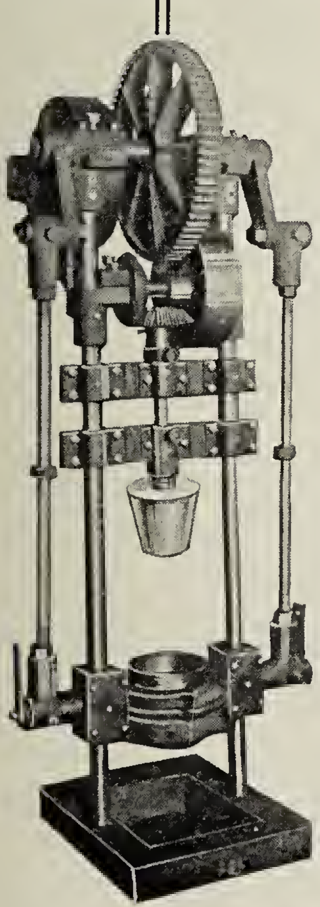

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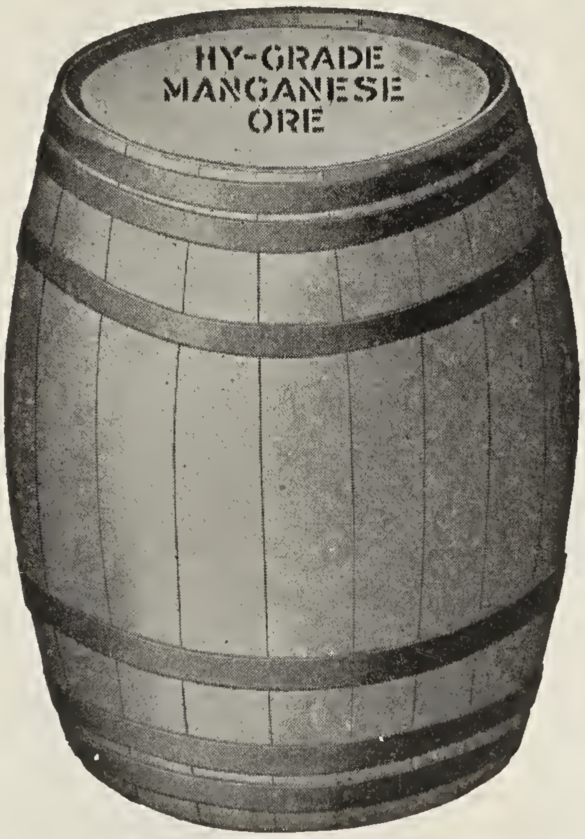
HUDSON FALLS, N. Y.



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Miner
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Grinders

Especially Prepared
for Brick Making

Announcement

The American Dressler Tunnel Kilns, Inc., will have a message for the clay products industry in the near future which will be of considerable interest.

The message will appear in this paper at the earliest possible moment. In the meantime we are, as usual, ready to serve you.

American Dressler Tunnel Kilns, Inc.
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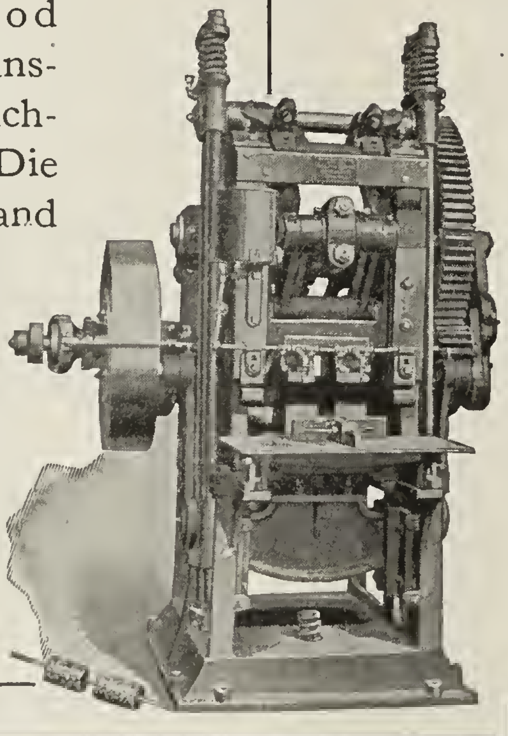
ROBINSON
CLAY MACHINERY

ROBINSON equipment includes everything for the clay plant.

See Our Catalog in the Clay Products Cyclopedia

We manufacture the Lakewood Dryer and Transfer cars, the Richardson double Die Steam Repress and the Pittsburgh Hot Air Dryer, mine cars and barrows.



FRANK H. ROBINSON
918 Behan Street, N.S.
PITTSBURGH, PA.

General G. Price, city commissioner J. P. Eyre Price, and Samuel Aaddis of the Chester Lumber & Coal Co. The plant will have a capacity of 75,000 brick daily.

PLAN NEW FIRE BRICK PLANT

William L. Mitchell and John L. Porter, president and secretary of the Gillmore Fire Clay Co., of Pittsburgh, Pa., were in Morehead, Ky., recently inspecting a tract of 14,000 acres of fire clay deposit. Mr. Mitchell stated that the present intention of his concern was to erect a mammoth plant at Hay's Station, six miles east of Morehead. This deposit is located on the C. & O. railroad.

SUPERIOR SILICA MOVES OFFICES

The Superior Silica Brick Co. has removed its general offices from Altoona, Pa., to the new Farmers & Merchants National Bank Bldg. at Tyrone, Pa. The company's new address will be P. O. Box No. 7, Tyrone, Pa. This move was made in order to get the executive department and general offices nearer to the place of operation, which is at Port Matilda, Pa. The company believes that it will be in a position to give better service than heretofore.

PUBLISHES SPLENDID BOOKLET

A most interesting booklet has been published by the Lancaster (Pa.) Brick Co., entitled, "Just Common Brick." It describes the qualifications and merits of common brick and its use in homes, industrial buildings and other structures. A section is also devoted to types of mortar joints and bonds, common in brickwork. The economy and utility of brick, as well as its beauty and attractive appearance, are also stressed. The booklet is profusely illustrated and is in every way a work which will do the industry much good.

REBUILDING REFRACTORIES PLANT

Operations at the fire brick plant located at Monument, Pa., a plant of the Harbison-Walker Refractories Co., will be stopped until the new modern plant which is being erected will have been completed. Mines of the plant will not be shut down, it is understood, in order that the supply of raw material will continue uninterrupted to other plants of the company. In connection with the new plant being erected the Harbison-Walker Refractories Co. plans to build 40 new houses for employes. Material for the new construction is now being received.

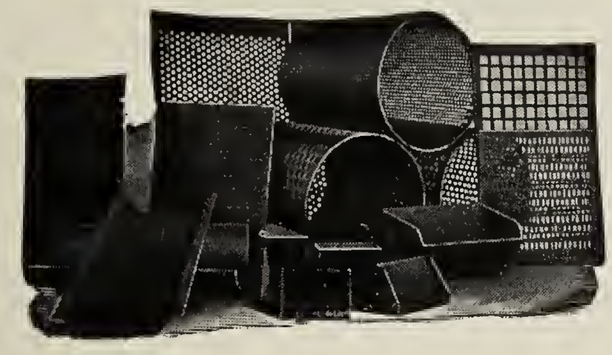
FIRST HOME SHOW FOR S. C. CITY

The first annual Southern Homes Show will be held this year at Greenville, S. C., in Textile Hall, Oct. 22 to 27 inclusive. Decision to have the show at Greenville was reached due to the fact that Textile Hall is the best place for it in the Southeast, providing 40,000 square feet of floor space. It will be modeled after the "Own Your Home" show held recently in New York, and will be under the auspices of the Greenville Builders Exchange. Southern brick and building material manufacturers and dealers are to be well represented at the show, with the former advocating brick for home building as economical, beautiful and lasting.

FIRE FIRST KILN OF TENNESSEE PLANT

The latest industry in Rockwood, Tenn., the brickyard owned by A. E. Venable at Cardiff, is now in operation, the first temporary kiln now burning about 112,000 brick. In the course of a few months permanent kilns will be built. Mr. Venable reports that demand for his brick is good and that he has already sold the output of several kilns to parties in Rockwood.

HENDRICK SCREENS
FOR ALL PURPOSES



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STACKS, TANKS,
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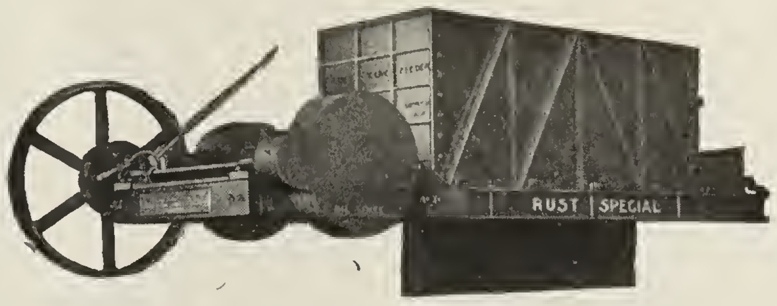

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Special Installations for your particular product.

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The Ideal Belt for Brick Plants
Highest Quality Material
Best and Finest Workmanship
By Most Highly Skilled Craftsmen
Power-Saving Long-Lasting
on Service Basis Cost is Lowest
Try a VEELOS

The Standard Belt of the World

MANHEIM MANUFACTURING & BELTING CO.
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STEVENSON'S EQUIPMENT
CUTS THE COSTS

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Dry Pans
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Gravity Elevators
Brick Barrows
Tile Barrows
Sewer-Pipe Barrows
Gigs,
Etc.

STEVENSON

FORM COMPANY IN DALLAS

The Phoenix Brick & Tile Co. of Dallas, Tex., has been incorporated with a capital stock of $40,000, a report states. C. W. Martin, H. E. Stafford and P. S. Russell have been mentioned as incorporators.

TEXAS CLAY PRODUCTS OPENS

The Texas Clay Products Co., a new brick plant at Malakoff, Tex., with a capacity of 20,000 brick per day, has opened and is one of the largest plants of its kind in the Southwest. A double shift will be run as soon as sufficient force can be maintained to keep up with the demand.

FT. WORTH TURNS TO BRICK

In scores of homes now being erected in Fort Worth, Tex., it is noticeable that a large number of them are completed of brick. The Fort Worth newspapers are giving quite a bit of publicity to this fact. Recently the Fort Worth Record had an interview with W. R. Bennett, president of the Acme Brick Co., who claimed that economy in the construction of brick houses is the same as that practiced when a person buys a ten dollar pair of shoes. They will look better, wear twice as long and hold their shape more truly than a pair of eight dollar shoes. Mr. Bennett also said that his company is now shipping into Fort Worth an average of 250,000 brick per month for construction there.

BIG TEXAS CONSOLIDATION

Announcement has been made by W. E. Weatherford of the organization of the Ferris (Tex.) Brick Co., which includes the original plants of the Ferris Pressed Brick Co., Globe Pressed Brick Co., Lone Star Pressed Brick Co., Diamond Pressed Brick Co., Cole Pressed Brick Co., and the Kooken Pressed Brick Co., all located at Ferris, Tex. This consolidation was brought about in order to effect economies in manufacturing costs and management, according to W. E. Weatherford, president of the company. The capitalization of the new company is $500,000.

Other officers are: E. T. Cole, vice-president; Van Johnson, manager; J. A. Carpenter, secretary-treasurer.

Ferris is only a few miles from Dallas, and the proximity of the brick manufacturing city to Dallas has done much to encourage extensive building operations in Dallas, for brick is usually as low in price at Dallas as in any other city of the country.

CONCRETE BRICK PLANT FOR VIRGINIA

The Virginia Shope Brick Corp. has recently been organized at Roanoke, Va., and it is reported that a charter calling for $100,000 in preferred stock and 1,000 shares of common stock, has been granted them. Officers of the company are: J. H. Dunkley, president; C. M. Brown, secretary; C. B. Funck, director. The company will manufacture brick, tile and similar materials.

BEGIN WORK ON NEW PLANT

Following successful negotiations with the Southern Railway for a side track to be built to the site of the new plant, the Big Stone Gap (Va.) Brick & Tile Co. began work immediately on the construction of the plant. Announcement of the organization of this company was made in these columns some time ago. The concern is capitalized at $100,000 which is practically all paid in.

SPENDS $2,000 FOR NEW EQUIPMENT

New equipment to the extent of $2,000 has been purchased by the Spencer Brick Co. of Charleston, W. Va., a report states. Approximately $5,000 will be spent in addition to the $2,000 mentioned before operations will being at the plant. It is expected to have the plant in readiness next spring.

A
PREVENTIVE

Supply your men with Des Moines Glove Co. Hand Pads and prevent dissatisfaction resulting from unpleasant working conditions.

No. 305
$4.25 per Doz.
$48 per Gross Pair

Men can't work efficiently with sore hands. Make working conditions more agreeable around your plant and watch dissatisfaction vanish and labor turnover decrease.

DES MOINES GLOVE & MANUFACTURING CO.
DES MOINES, IOWA

No. 300, $7.80 per doz. $90 per Gross Pair

FREE
To any manufacturer whose men have not been using Des Moines Hand Pads who will clip out the Hand Pad shown here and mail it to us with his letterhead we will send FREE a pair of Des Moines Pads.

"WITH ONE MAN and one ERIE Shovel, we easily get our 300 cubic yards per day. This is sufficient to take care of the daily output at each of our 3 plants, but we could easily increase this output if necessary. In our opinion, the ERIE is *the* shovel."—*Edw. T. Conley, Sec'y, Bradford Brick and Tile Co., Bradford, Pa.* (Owners of 3 ERIES.)

For larger output than the above—500 to 600 cubic yards per day, or more—it is advisable to use two men on the shovel. But when your plant requirements are not too great an ERIE and one man will serve.

We will be glad to send you data showing just what you can do with the ERIE. Write us.

ERIE STEAM SHOVEL CO.
Formerly Ball Engine Co.,
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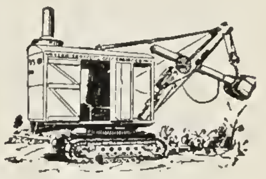
Builders of ERIE Steam Shovels and Locomotive Cranes



ERIE Shovels can be had with broad tired traction wheels, standard gauge car wheels, or on ERIE lubricated caterpillar type mounting. All interchangeable on the same truck frame.

ERIE Revolving Shovels
ERIE Steam Shovels

Osgood ¾ yd. H. D. with Clamshell in Clay Pit

Reliability-Service-Osgood

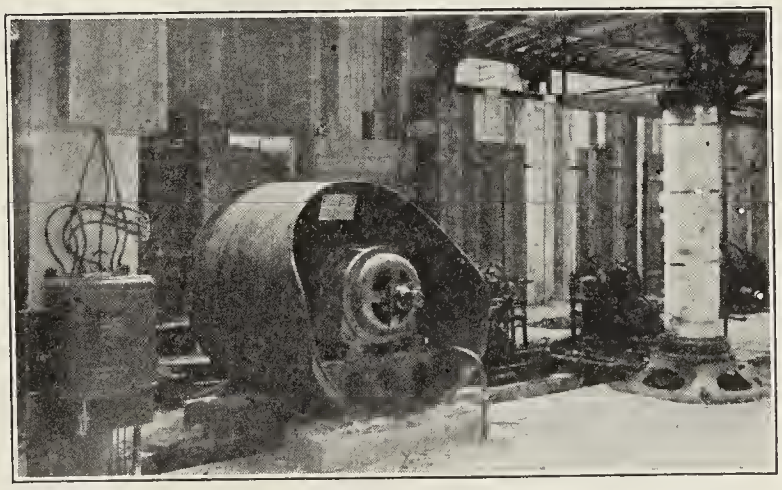
Three words of great importance to the user or prospective user of Steam Shovels. OSGOOD Steam Shovels are built reliable—right in our own factory—to give long and satisfactory service in the field.

An OSGOOD can only be fully appreciated after it has been seen. Watch one at work. Our new Bulletin 231 will tell you more about them.

¾—1 and 1¼ Revolving Type Steam Shovels, Clamshells, Draglines, 1½ to 6 yd. Railroad Type Steam Shovels.

The OSGOOD Company
MARION, OHIO, U. S. A.

Oil Fired Kilns



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Installed in your plant will—

—Save labor
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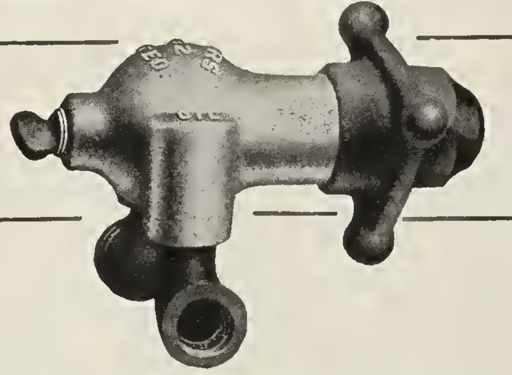

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MORE THAN 70,000 IN USE

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START HOMEWOOD, W. VA., PLANT

The brick and tile plant at Homewood, W. Va., near Weston, has again been started by George I. Keener. This plant has been idle for a number of years. At present 25 men are being employed in the manufacture of hollow tile.

TO START BUILDING PLANT

The Eastern Sewer Pipe & Brick Co., of Martinsburg, W. Va., which was recently incorporated for $350,000, will erect the first unit of a sewer pipe and brick plant at a cost of $243,000, including the equipment, it is stated. The building will be fireproof but the date for receiving proposals for the erection of the plant or for equipment has not been decided upon, altho the firm reports that it is ready to correspond with concerns furnishing equipment along its needs.

STANLEY PLANT CLOSES

Operations at the plant of the Stanley (Wis.) Red Pressed Brick Co. were suspended recently because of the dull market for brick. The plant will probably not reopen during this season.

FIRE DAMAGES STEVENS POINT PLANT

The building housing the boiler room and brick machinery of the Stevens Point (Wis.) Brick Mfg. & Construction Co., was destroyed by fire July 9. The loss was estimated at $15,000. The company plans to rebuild the plant at once.

SELL JEFFERSON BRICK & TILE CO.

The Jefferson Brick & Tile Co., which operated a clay brick and tile manufacturing plant in Jefferson, Wis., for many years and of which John C. Fischer was president and Anton Steel, secretary-treasurer, has been succeeded by the Kemmeter Brick & Coal Co. Several weeks ago the property was sold to Charles F. Stengel who has now disposed of it to the Kemmeter interests. The latest owners will put the plant into active production as soon as possible. The Kemmeter Brick & Coal Co. has been engaged in the manufacture of cream colored common brick and drain tile for 60 years. Mike Kemmeter started the original plant in 1863 and carried on alone for 30 years. Upon his death in 1893 the business was taken over by his two sons, Charles and Gottlieb. When Charles died in 1914 his interest was taken over by Gottlieb who conducted the concern alone until 1919 when the business was incorporated. Gottlieb Kemmeter is president, Nick Kemmeter, vice-president, and Alphons, secretary-treasurer. The Kemmeter interests now own the two clay products plants at Jefferson and will operate them as extensively as the labor supply will permit. A ready market has been found for the output.

LOVELL COMPLETES REPAIR WORK

Repairs which are being made at the Lovell (Wyo.) Brick & Tile plant are practically completed and operations will be started soon.

CHANGES PRODUCT TO WIRE CUT BRICK

Thomas E. Martin, Thamesville, Ont., who has been making drain tile, is again taking up the manufacture of wire cut brick.

FORM NEW CANADIAN COMPANY

The Riselay Brick Co., Ltd., Hamilton, Ont., has been incorporated with a capital of $40,000 by C. B. Riselay, W. E. Smith and others to manufacture and deal in brick, tile and terra cotta. They have purchased the brick plant of George Frid.

THE
IRONTON
STORAGE BATTERY LOCOMOTIVE

BEFORE you can buy an Ironton Storage Battery Locomotive our engineering department must know that it will give you satisfactory and economical service. There is no obligation on your part if you allow us to submit definite facts based on a careful survey of your conditions. When we suggest an Ironton, we know that Ironton will make a delighted owner. Write us.

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711 First National Bank Bldg., Fort Smith, Ark.
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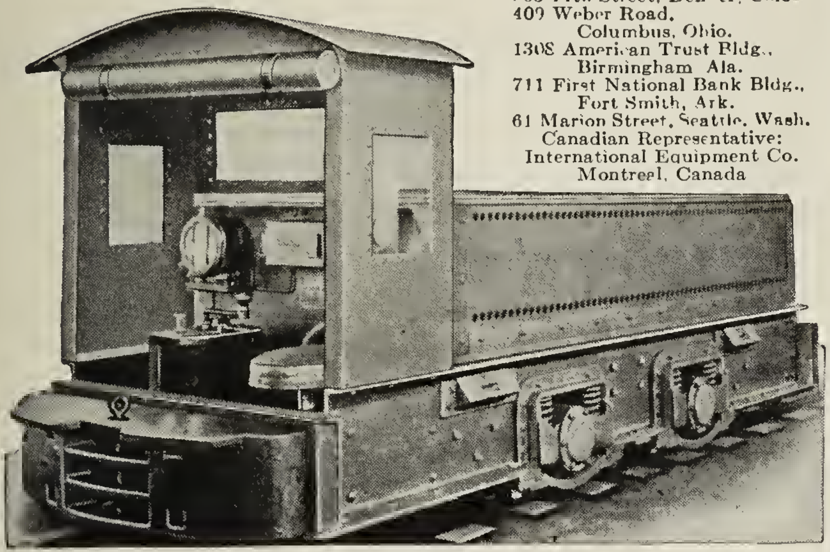


Substantial Savings
and
Increased Production

result from using Burke Electric Motors and Generators. They operate successfully under the most severe conditions.

Send for list of satisfied users in your industry.

✣ ✣ ✣

BURKE ELECTRIC CO.
MAIN OFFICE AND WORKS
ERIE PENNSYLVANIA
Branch Factory
CONNEAUTVILLE, PA.
Service-Sales Offices
NEW YORK CLEVELAND PHILADELPHIA
PITTSBURGH DETROIT BUFFALO
Sales Agencies
CINCINNATI: UNDERWOOD ELECTRIC CO.
KANSAS CITY: W. T. OSBORN
SAN FRANCISCO: *Coast Equipment Co.*

Salem Elevator Buckets

We are manufacturers of the original SALEM ELEVATOR BUCKET which is used for handling all classes of materials in many different industries.

This type of bucket is of one piece construction, with rounded contour throughout, smooth in form, durable in service and clean in handling and delivery of materials.

There are no seams in front nor on the ends, the laps being made on the back and bottom at the ends. On the back the laps are riveted or spot welded; on the bottom the end pieces are bent under and hammered tight.

The widest range of service is covered by a very full line of regular types and sizes and made in various gauges of steel, from the lightest practical for ordinary work to the heaviest necessary for the most severe duty.

Write for new price list.

THE WEBSTER MFG. COMPANY
4500-4560 CORTLAND ST., CHICAGO
Sales Offices in Principal Cities

Ideas Are Money

THAT is why "101 Ideas for Improving the Clay Plant" shall be worth real dollars to every owner, operator, manager or superintendent of a clay products manufacturing plant.

This is a book of 128 pages, containing exactly what its title indicates—101 bona fide ideas fully illustrated. It presents no theories of cost reducing or untried ideas which might seem good, but every one of the ideas presented has been tried out in actual service in the clay plant.

Only a limited number of copies has been printed. Get yours now!

Book Dept.
BRICK AND CLAY RECORD
407 S. Dearborn St.
Chicago, Ill.

EXCAVATE ECONOMICALLY

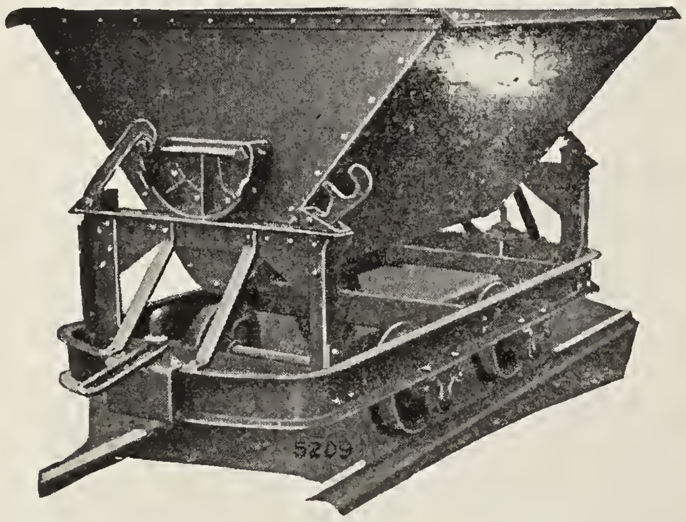
Reduce your clay pit costs by cutting overhead charges of expensive steam shovels as well as running, fuel, and repair charges.

Read what the Yankee Hill Brick & Clay Company say of their electrically operated Bay City Excavator:

"After years of trouble, inconvenience, and delay in connection with hauling coal and water, repairing leaky flues, boilers, and water lines, it is a great relief to operate a machine that gets its coal and water thru a pipe containing three wires."

Send for details.

THE
Bay City Dredge Works
BAY CITY, MICH.



Type-504

Easton Car & Construction Co.
EASTON, PA.

OFFICES

Hudson Terminal............New York
Morris Building............Philadelphia
Kunkel Building............Harrisburg
Jefferson Building............Birmingham
Hearst Building............San Francisco
Oliver Building............Pittsburgh
McKevitt Building............Norfolk
Andrews Law Bldg.....Spartanburg, S. C.

EASTON CARS
FOR EVERY INDUSTRIAL PURPOSE

CHATHAM PLANT OPERATES AGAIN

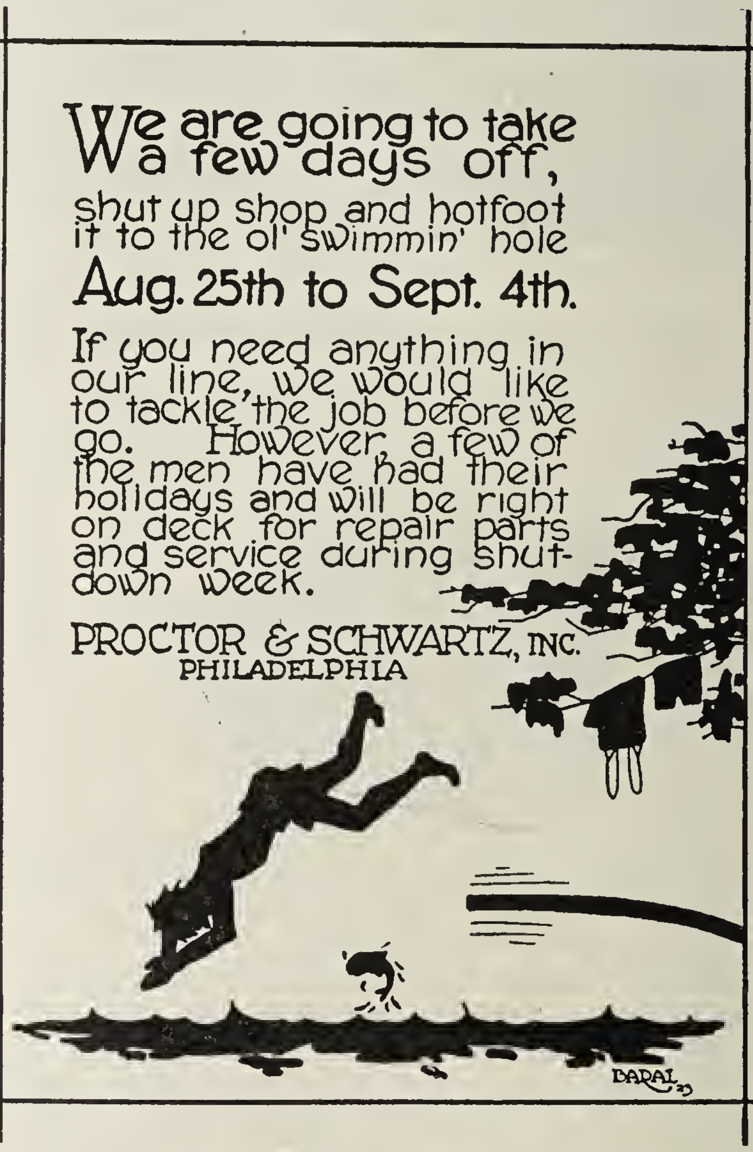
The Sydenham Brick & Tile Co., Ltd., at Chatham, Ont., formerly known as the Wallaceburg Brick & Tile Co., which was closed down for repairs for some time, is again operating on full time. E. C. Morse is manager.

TAKE OVER BRIGDEN PLANT

Ontario Farmers Drainage Co., Ltd., has been formed to take over the Brigden (Ont.) Brick & Tile plant, formerly operated by McDonald Bros. Andrew Hicks, formerly a member of the Ontario Provincial Legislature, is president of the new company, and Robert McDonald is manager. C. S. Parker, 110 Dundas St., London, formerly brick manufacturer at London, is associated with the new tile company as service manager.

Among Our Advertisers

Details Concerning New Models, Changes in Personel, News Matters, etc., That Our Advertisers Believe Will Interest Our Readers



We are going to take a few days off, shut up shop and hotfoot it to the ol' swimmin' hole Aug. 25th to Sept. 4th.

If you need anything in our line, we would like to tackle the job before we go. However, a few of the men have had their holidays and will be right on deck for repair parts and service during shut-down week.

PROCTOR & SCHWARTZ, INC.
PHILADELPHIA

We Envy Them!

UNIQUE PAN BULLETIN ISSUED

The Bonnot Company at Canton, Ohio, has just issued a four-page bulletin covering the special features of their nine-foot dry pan.

The most interesting part about the bulletin is that the details of this pan are shown clearly. Those features which are more or less standard in all makes of pans are printed in black. The special features of the Bonnot pan are mentioned in the various parts of the bulletin in red type. In this way the users or possible purchasers can easily compare standard parts with the special features obtained in the Bonnot equipment.

THE MINTER SYSTEM

200 Lbs. Coal per Ton of Ware

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. **Saving first cost of 6 tunnels and equipment.**

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

DON'T BUILD BEFORE YOU KNOW

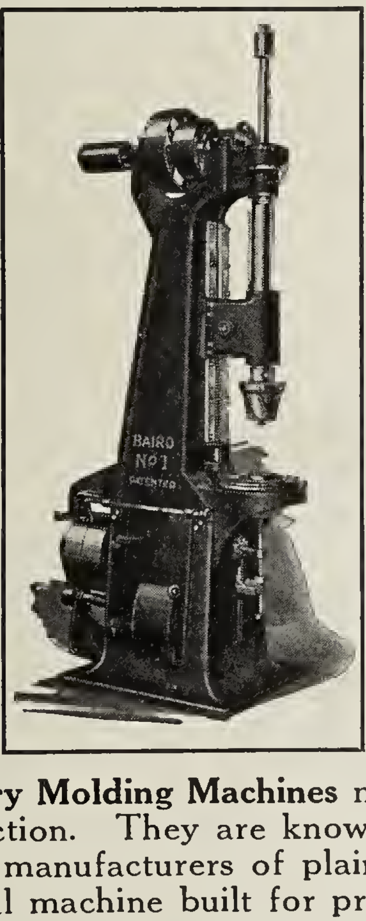
The Minter System Plants are Producing the Cheapest Building Material made in America today.

The Minter System

HOME OFFICE
Albany, Georgia

BRANCH OFFICE
215 Doctors Bldg.
Columbus, Georgia

Ask the User



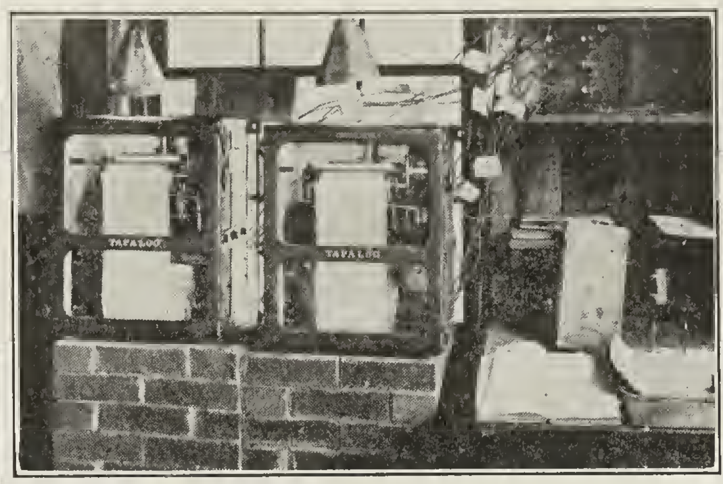
Better Than Ever

Baird Pottery Molding Machines need no special introduction. They are known the world over by all manufacturers of plain pottery as the only real machine built for producing this class of ware. A talk with any manufacturer using these machines will convince you. Built in four sizes. For particulars address,

ANDREW BAIRD

Designer - Manufacturer - Pottery Machinery

409-10 Burns-Gray Building, Detroit, Mich.



Tapalogs At Watsontown Brick Company

The following extract is from this company's letter dated March 15, 1923:

> "It would be making no over-statement to say that we are very well satisfied with the work obtained by the use of your pyrometers."

After a year's successful performance of the Wilson-Maeulen pyrometers at Watsontown plant, an installation of these pyrometers was made in the same company's plant at Paxtonville, Pa.

This is typical of the growth of the Wilson-Maeulen business and signifies that our repeated orders are brought about not by what we say, but by the actual performance and service records of our installations.

Ask us to show you how Tapalogs will help you. Heat properly controlled and its performance recorded, is first aid in Ceramic production.

Wilson-Maeulen Tapalogs will help you.

WILSON-MAEULEN CO.
Makers of Rockwell Hardness Testers and Wilson Maeulen Recording Pyrometers
731 EAST 143RD ST, NEW YORK

Hurricane Dryers

Drying Dipped Dinner Ware at a reduced cost and without marking is a problem "Hurricane" Engineers have solved for many manufacturers.

"Hurricane" Dryers are constructed and equipped to reduce steam, labor, power consumption, and turn out the best finished ware.

Where our standard machines will not meet requirements, we are prepared to submit plans for especially designed apparatus.

Let us tell you how our equipment can be applied to your plant.

See Our Catalog in the Clay Products Cyclopedia

The Philadelphia Drying Machinery Company
3351 Stokley St. Philadelphia, Pa.

Western Agency: 1814 Continental Bank Building, Chicago

IMPROVEMENTS BEING MADE

In line with a continuous desire to improve conditions surrounding the operation of clay products machinery, the Hadfield-Penfield Steel Co. of Bucyrus, Ohio, has developed a new pug-mill knife which will no doubt decrease the cost of repairs very decidedly. The construction consists of a cast steel shank which is fitted into the main of the pug-mill shaft. A chilled renewable blade is fastened thereto by two plow bolts.

This blade is made of a special mixture of various irons and has a working face which is chilled so that it will resist abrasive wear longer than any metal that has been used previously for this purpose.

⁂

ACTUAL PYROMETER USE EXPLAINED

All of us take more stock in any publicity that is backed up by written evidence of the savings effected for the user.

This was the idea back of the publication of a folder by the Brown Instrument Co. of Philadelphia detailing the experience of the Mitchell-Bissell Co. with one of the Brown pyrometers in their porcelain plant. Figures showing the actual savings and a letter from the users are included. There is also a copy of the actual report made by one of the burners showing uniform increase in temperature at every point in the kiln.

A part of the circular is taken up by an explanation of the general features of the Brown pyrometer, and there is a significant statement made to the effect that 80 per cent. of all ceramic plants using pyrometers have Browns.

⁂

The Des Moines Glove & Mfg. Co., Des Moines, Iowa, will have quite an extensive exhibit of their industrial gloves at the Municipal Pier, Chicago, September 24-29.

This is the occasion of the Convention and Exposition of the National Association of Retail Clothiers.

Some brick manufacturers might happen to be in Chicago at that time, and the Des Moines Glove & Mfg. Co. would be very glad to have them call at their exhibit and to have an opportunity to examine personally the type of glove that has become so necessary and popular in so many brick plants of the country.

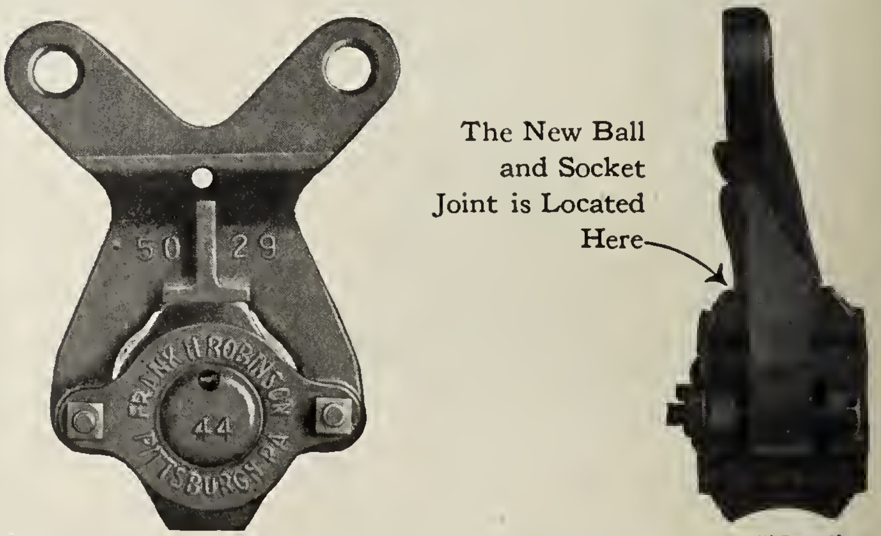
⁂

DRYER CAR AXLE TROUBLE ENDED

A new type of dryer car bearing has just been put on the market by Frank H. Robinson of Pittsburgh, Pa. The outstanding feature of this bearing is the ball and socket joint, which enables the car to pass over rough or uneven places in the track without danger of injuring the axle.

This improvement, as shown clearly in the illustration, will be a boon to many manufacturers who have trouble with twisted or broken axles, due to poorly constructed tracks, or uneven foundation under the track.

This bearing is economical, oil tight, interchangeable, and automatically self-aligning. It is being placed on all new cars, when desired by the purchaser, without extra charge.



Front View **Side View**

Two Views of the New Improved Dryer Car Bearing Made By Frank H. Robinson.

⁂

FLEXO "HIGH DUTY" BELT FASTENERS

The Flexo High Duty Belt Fastener, now actively advertised for the first time, has been designed to meet the severe conditions encountered in certain troughing conveyor belting installations.

It has been thoroughly tried out in a number of industries under wide range of service conditions and as a result has been adopted almost universally wherever tried.

ACCURACY Begins At The Die—

If your finished ware is to be within the limits of accuracy, it must issue from an accurate die.

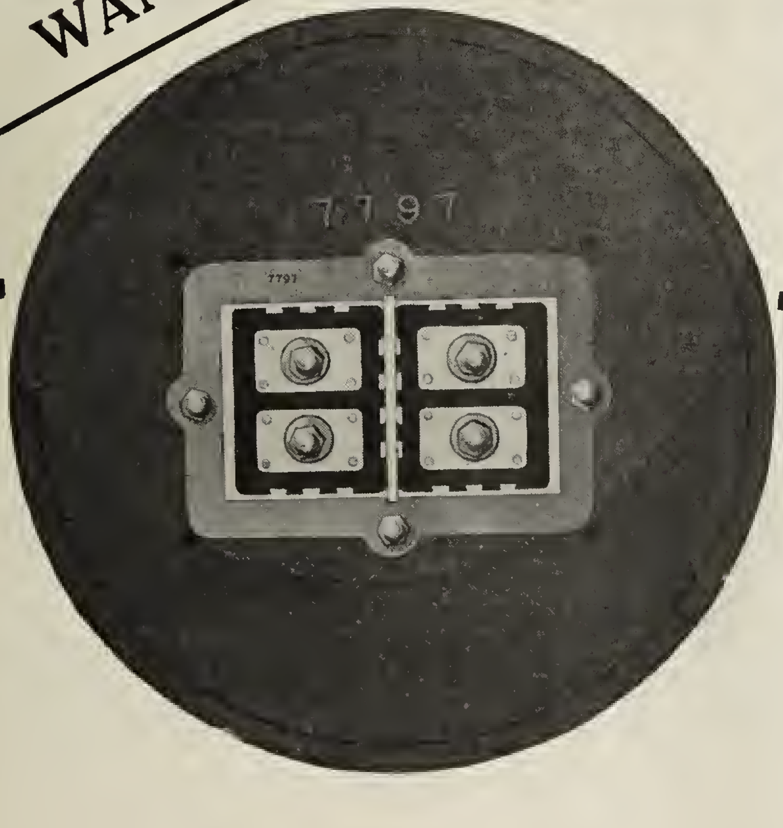
Accuracy, strength and wear-resisting qualities are built into every Louisville die. Ware of consistent weight and size creates a demand for your product and relieves you of worry about a vital part of your plant.

Write for Louisville die data today

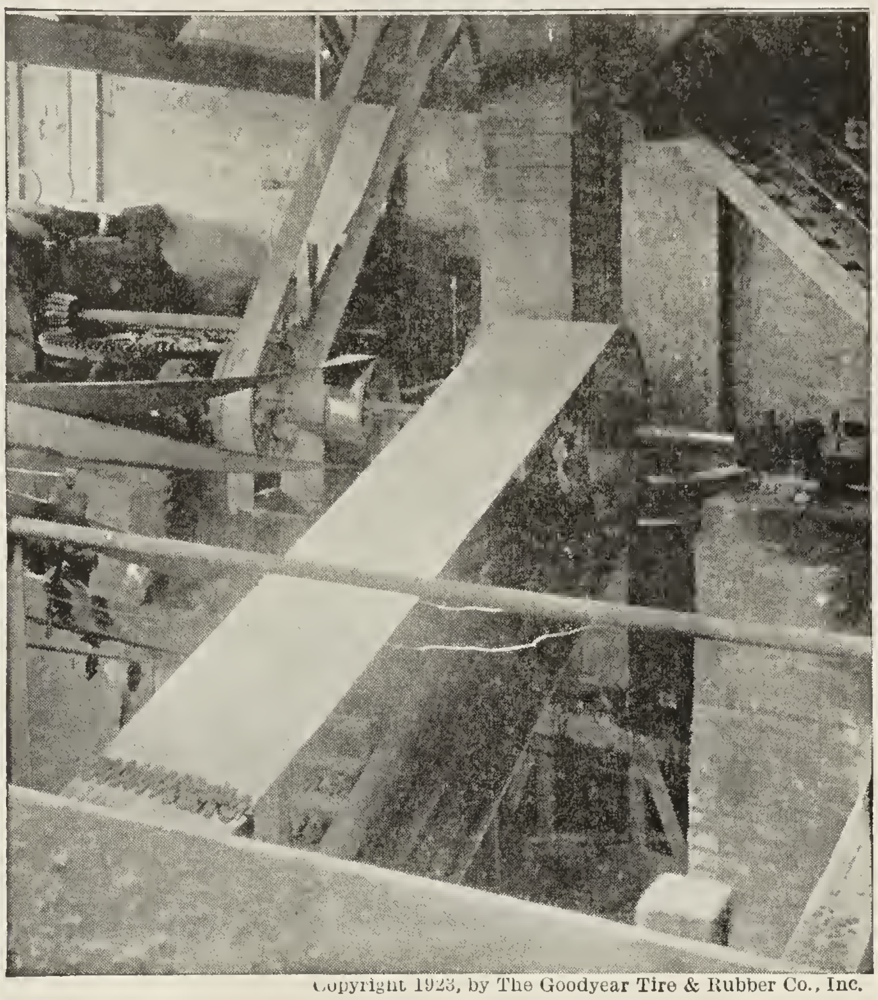
The LOUISVILLE MACHINE MANUFACTURING CO.

LOUISVILLE, OHIO

"IF IT'S DIES YOU WANT—WE MAKE 'EM"



GOODYEAR MEANS GOOD WEAR



Copyright 1923, by The Goodyear Tire & Rubber Co., Inc.

On all the hard drives for which the brick and clay industry is noted—the main drive, the crushers and grinding pans, pug mills and brick machines, represses and auxiliaries—and in all conveying and elevator duty, Goodyear Belts have an earned reputation for powerful, trouble-free service and long, economical life.

TRANSMISSION
Goodyear, Klingtite, Glide
CONVEYOR
Goodyear, in distinctive types for specific services
HOSE
Air, Water, Steam, Fire and Mill
PACKING
Asbestos and Rubber Sheet
PUMP VALVES

Goodyear Belts and other mechanical goods for the brick and clay industry are scientifically specified to their work under your conditions of service by the G. T. M.—Goodyear Technical Man.

For performance records or any other information about them, write to Goodyear, Akron, Ohio, or Los Angeles, California.

Goodyear Means Good Wear

GOODYEAR

BELTS · HOSE · VALVES · PACKING

Black 4th Vein **Betty**

TRADE MARK REGISTERED UNITED STATES PATENT OFFICE

The "real coal" for
clay burning and
steaming purposes

Low in Ashes
Low in Sulphur
High in Heat Units

Prepared with latest improved

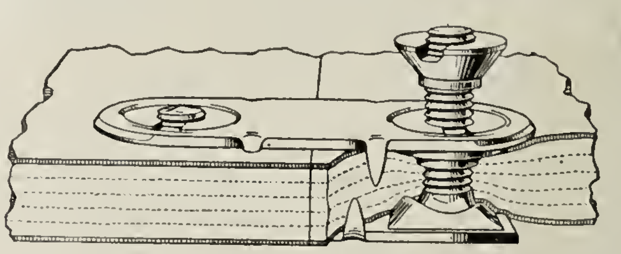
Shaker Screens
Loading Booms
Picking Tables

Mines Located at Clinton, Indiana,
on the C. & E. I. Railway

Zimmerman Coal Company
609 Tribune Building
Long Distance Wabash 9921
Terre Haute, Indiana

It makes a tight butt joint, smooth with belt on both sides and gives a joint of very high tensile strength. In general, it may be said to consist of two plates joined by two bolts.

The illustration clearly shows the special design in which a new application of the compression principle gives an even well balanced grip in the belt and accounts for the extra strength shown by these fasteners in technical tests and field service.



Showing the Special Design of the Flexo High Duty Belt Fastener

These fasteners are manufactured by the Flexible Steel Lacing Co., Chicago, U. S. A.

⁂

IMPROVED METAL ON MARKET

An improved metal has been added to the material from which clayworking machinery is manufactured. This metal is known as "Toronto" alloy, and is furnished by the Toronto Foundry & Machine Co., at Toronto, Ohio. This material has been developed by a series of experiments to the point where it is assured that it will accomplish the desired end.

The metal is harder, stronger, has better wearing qualities and is of closer structure than standard gray iron. It is especially suited to be used for mullers, grinding plates, scrapers, and scraper plates, heavy gears, and in general any casting subject to destructive wear. The superior properties are listed in a special announcement furnished by the Toronto Foundry & Machine Co.

This company is also making a special drive on its heavy duty dry pan and has prepared a special bulletin D-3 for distribution to illustrate the special construction and list the main features.

⁂

NEW PLANT FOR CONVEYOR COMPANY

The Fairfield Engineering Co., formerly located in Lancaster, Ohio, are now occupying their new plant in Marion, Ohio.

This company manufactures automatic loading, unloading and conveying equipment and have numerous installations in brick and tile plants.

The new factory is of mill type construction, 90 feet wide and 240 feet long. The walls are of brick and glass, affording ample daylight, while the frame is of steel construction. A crane-way runs the full length of the building and the plant is equipped with modern machinery for producing conveying equipment of high class and best workmanship.

Prompt shipments are assured on account of switching agreements with three railroads, and the plant itself is built on the main line of the Big Four. This company will furnish names of brick plants using their equipment promptly on request.

New Plant of Fairfield Engineering Co.

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

Predictions Materialize

AT VARIOUS INTERVALS during the past three or four years, Brick and Clay Record, editorially, has predicted the advent into the industry of mammoth plants, with quantity productions, and consequently lowered operating costs.

As a rule these predictions were taken with a large grain of salt—if taken at all. The dominating thought of the average manufacturer, and particularly the face brick manufacturer, was: "We've always sold all we can make, and we always will."

The editors of Brick and Clay Record have never been in the habit of gloating—it is not the purpose of any good trade paper to gloat. Nevertheless, it is a fact that the situation long ago predicted is here, at least in the central Ohio district. And the handwriting on the wall points to similar developments that will cause the same situation to prevail in other sections.

A representative of Brick and Clay Record, while traveling, found during the last week of August, some of the old, well established plants piling up their stock, while, in the same territory, some of the newer plants are continuing to sell every brick that comes out of the kilns. And this in the face of a decided slump in the demand.

One manufacturer, in discussing this situation, frankly admitted that he could not compete with these newer plants. A differential of from two to six dollars a thousand for the same quality of brick simply put him out of the running. And yet this same manufacturer claimed to have a very modern and efficiently operated plant with a large capacity. Also a thoroly modern cost-accounting system, a line of dealers who had been selling easily all the brick that could be made at a price which returned a fair profit. Some of these dealers have frankly shown their books and have proved that they have bought brick—of an equal quality—at prices which were almost actual cost of manufacturing for this operator.

A year ago Brick and Clay Record stressed the necessity of cutting costs and improving methods. Hundreds of plants were visited, dealers were interviewed, thus showing the tendency of the demand. Face brick manufacturers were informed that many plant operators were investing in labor-saving equipment of all kinds and rebuilding and changing the layouts of their plants in order to lop off some of the unnecessary expense of making brick.

When these plants had succeeded in reducing costs, they naturally were in a position to lower their price. And the plants that continued manufacturing, without any real reduction in costs, could not meet the price and still make a profit.

There is still time to prevent piling stock to the sky. Cut your costs—lower your price—and advertise.

* * *

Follow a Good Example

THRU THE DEALER lies the way to greater prosperity for the clay industry. This would seem to be apparent when one studies the methods of other industries that have been successful. We might cite the case of lumber. No one can deny that the lumber industry has been successful in marketing its products, and one of the big factors in its success has been the fact that it is sold almost entirely thru the dealer. He is given protection and accorded practically the same consideration as the salesmen who are directly employed by the lumber manufacturers.

There is no reason why a dealer policy founded on common sense and fairness to all concerned should not be successful in the clay industry. In fact there are clay products manufacturers who are right now doing a big and successful business thru dealers. We have in mind the Binghamton Brick Co. of Binghamton, N. Y. A description of this company's sales policies was published in last issue of Brick and Clay Record. We would urge every manufacturer to read this story with a view to finding in it some idea which can be adapted to help him in his own efforts to sell his product. The Binghamton Brick Co. is successful in a dealer policy, because it is not content merely to fill the orders as they come in from the dealers but employs four men whose business it is to help the dealers sell brick. And that is, it seems to us, a vitally important part of any dealer policy. The dealer is not naturally a brick salesman, he is much more accustomed to selling lumber, and therefore he must be shown how to sell brick. A little money spent on cooperative work will bring big returns.

The Binghamton company further plans to have a dealer in every town of 500 or more inhabitants. This is the true principle of dealer distribution, "a salesman in every town." The dealer policy of the Binghamton Brick Co. is exactly along the lines that Brick and Clay Record has preached and its success is ample proof that "it can be done."

* * *

Sure Signs of Progress

ONE of the surest indications that the clay industry is on the high road to better methods and greater progress is the ever-increasing interest being taken in research work. The hollow building tile, common brick, face brick and paving brick manufacturers have just recently completed an extensive program of research on burning which unearthed a wealth of data and revealed some astoundingly inefficient and wasteful methods. The Refractories Manufacturers' Association is now, in cooperation with the Bureau of Mines, conducting an investigation into burning methods similar to that just completed by the four associations mentioned. Another move which indicates a newly developed thirst for knowledge has been made by the Hollow Building Tile Association. This association, in cooperation with the Bureau of Standards, is conducting a research into the design of hollow tile dies. Unquestionably a study of this subject will bring out information of the greatest value to the hollow tile manufacturer as well as the manufacturer of hollow tile dies.

Research of the character above mentioned is of the highest importance and it is thru such channels that the clay industry will be enabled to give better products at more reasonable price to the consumer. We know of nothing which is deserving of more support than research work and in order to be most successful it must have the support of every man who will benefit therefrom.

Better Than Cutting Prices

A Mail Circular Idea That Brought 61.5 Per Cent. Returns to a Live North Carolina Manufacturer—It Brings in a Steady Business at Good Prices

FOUND: A manufacturer who believed that cutting prices to secure business was an unnecessary evil that could be overcome and who subsequently evolved a remarkably effective remedy. This manufacturer is the Geo. M. Norwood Brick Co. of Raleigh, N. C., and the plan was conceived by Geo. M. Norwood, of the company bearing his name. The idea is simple enough. Instead of sitting down and waiting for business to come to them they make a strong effort to bring business in in sufficient volume to keep the plants operating. A campaign of direct mail advertising has been started and has proved to be wonderfully successful. Enough business is secured by the sending out of interesting literature to make the company immune from the annual price war in its territory.

Before going farther a little information about the company which has succeeded in maintaining a fair price on its product while competitors in the neighborhood have felt themselves compelled to cut prices below cost in order to get business, would be interesting.

Selling Company Markets Plants' Output

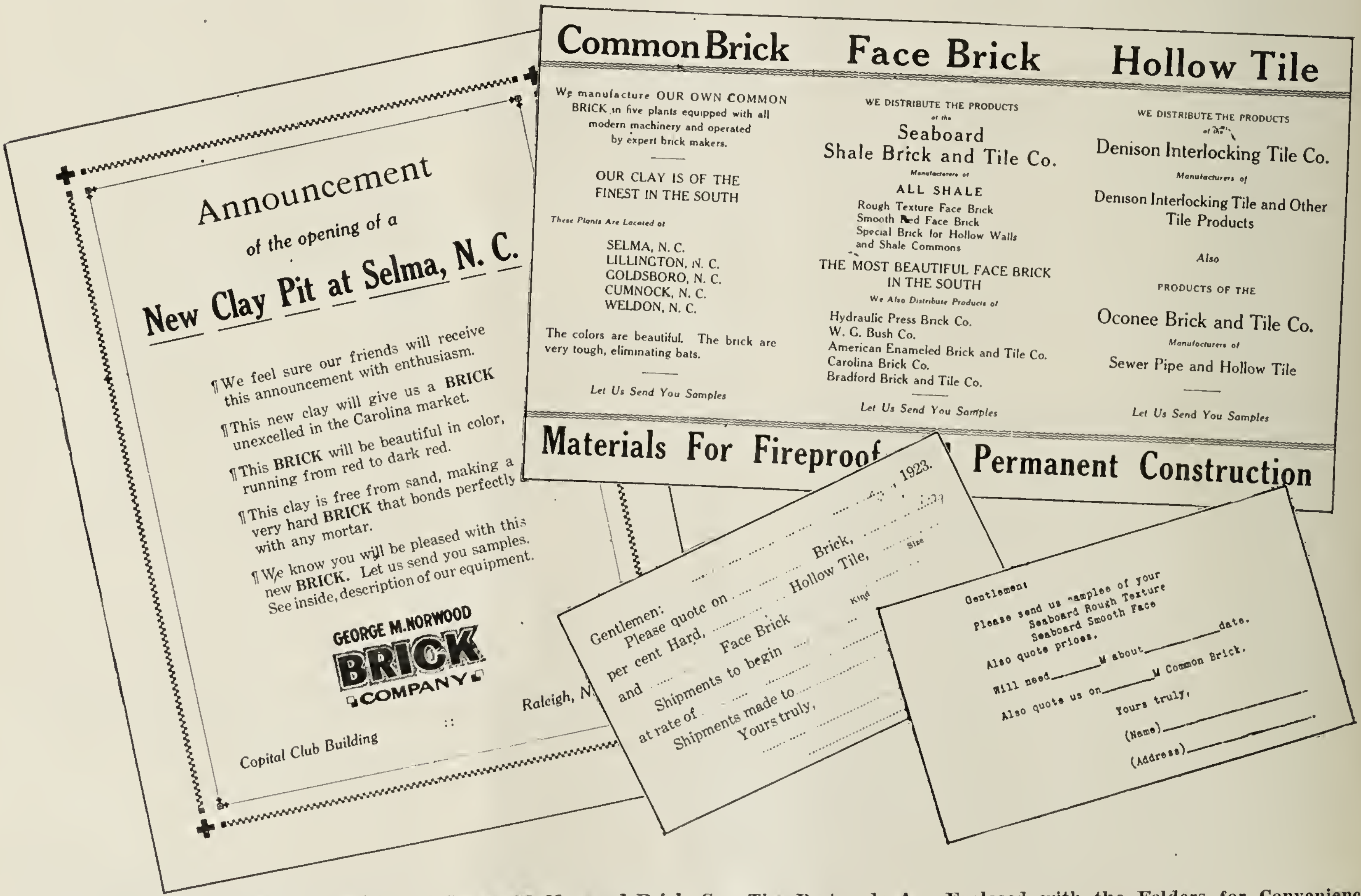
The Geo. M. Norwood Brick Co. is a selling organization which markets the output of its plants at Cumnock, Weldon, Lillington, Goldsboro and Selma, N. C. It is headed by George M. Norwood, who is but 26 years old and a ceramic engineer. While all the plants are practically under the same ownership and management, they are incorporated separately. All sales, purchases and so forth are handled by the George M. Norwood Brick Co. at Raleigh.

H. G. Moore, sales manager of the company, in writing of the company's development, says:

"About four years ago our business was started with the purchase of our Selma plant. This plant was in a rather run-down condition. Work was started immediately to put this in tip-top condition, developing into ten million production annually. In the meantime the old No. 1 plant at Lillington was purchased, which has since been discontinued with the completion of our No. 2 plant at that place. This new plant is equipped with all the latest machinery for brick manufacturing and has a capacity of ten million brick annually. Following this the Cumnock plant was acquired. The Goldsboro plant has been in operation for a number of years and belongs to George A. Norwood of Goldsboro. Arrangements were made the early part of this year by the George M. Norwood Brick Co. for the sales of the Goldsboro plant and also the Grant Brick Works plant at Weldon."

Believed Price Cutting Unnecessary

It was Geo. M. Norwood who conceived the idea that there must be some other way to do business than the old fashioned method of cutting prices down to a point where the brick were practically given away during the season when orders for


Announcement

of the opening of a

New Clay Pit at Selma, N. C.

¶ We feel sure our friends will receive this announcement with enthusiasm.

¶ This new clay will give us a **BRICK** unexcelled in the Carolina market.

¶ This **BRICK** will be beautiful in color, running from red to dark red.

¶ This clay is free from sand, making a very hard **BRICK** that bonds perfectly with any mortar.

¶ We know you will be pleased with this new **BRICK**. Let us send you samples. See inside, description of our equipment.

GEORGE M. NORWOOD BRICK COMPANY

Capitol Club Building :: Raleigh, N

Common Brick

We manufacture OUR OWN COMMON BRICK in five plants equipped with all modern machinery and operated by expert brick makers.

OUR CLAY IS OF THE FINEST IN THE SOUTH

These Plants Are Located at

SELMA, N. C.
LILLINGTON, N. C.
GOLDSBORO, N. C.
CUMNOCK, N. C.
WELDON, N. C.

The colors are beautiful. The brick are very tough, eliminating bats.

Let Us Send You Samples

Face Brick

WE DISTRIBUTE THE PRODUCTS of the

Seaboard Shale Brick and Tile Co.

Manufacturers of

ALL SHALE

Rough Texture Face Brick
Smooth Red Face Brick
Special Brick for Hollow Walls
and Shale Commons

THE MOST BEAUTIFUL FACE BRICK IN THE SOUTH

We Also Distribute Products of

Hydraulic Press Brick Co.
W. G. Bush Co.
American Enameled Brick and Tile Co.
Carolina Brick Co.
Bradford Brick and Tile Co.

Let Us Send You Samples

Hollow Tile

WE DISTRIBUTE THE PRODUCTS of the

Denison Interlocking Tile Co.

Manufacturers of

Denison Interlocking Tile and Other Tile Products

Also

PRODUCTS OF THE

Oconee Brick and Tile Co.

Manufacturers of

Sewer Pipe and Hollow Tile

Let Us Send You Samples

Materials For Fireproof Permanent Construction

........, 1923.

Gentlemen:
Please quote on .... Brick, ...
per cent Hard, ... Hollow Tile, ... Size
and .... Face Brick .... Kind
Shipments to begin ....
at rate of ....
Shipments made to ....
Yours truly,
....

Gentlemen:
Please send us samples of your Seaboard Rough Texture
Seaboard Smooth Face
Also quote prices.
Will need______M about______date.
Also quote us on______M Common Brick.
Yours truly,
(Name)______
(Address)______

Types of Folders Used in Mail Advertising of George M. Norwood Brick Co. The Postcards Are Enclosed with the Folders for Convenience of Dealers and Customers.

material began to slacken up. Acting on this theory, he organized the Geo. M. Norwood Brick Co. as a selling organization to market the output of the five North Carolina plants. The operation of this company can best be told in the words of Mr. Moore. He says:

"Up until the latter part of last year we had operated along the 'usual' line of operation in this territory, that is, 'Sell brick when you could and give them away when you couldn't sell them.' This method might suit some manufacturers, but it never suited us. Our problem then was how to go about making the change. It was altogether a new policy in this territory, making it up to us to work out our solution.

Start Direct by Mail Advertising

"Naturally, with something to sell it is necessary to have an organization to do the selling. Our sales department was organized with myself as sales manager. Campaigns were then instituted to get our business directly before the contractors and dealers, not forgetting the architects, of course. We have used various mediums to do this, but have found material like that illustrated to be the most effective."

Here it might be well to describe, parenthetically, the nature of the literature sent out by the company. The character of some of it can be seen by the illustrations accompanying this story. The company sends out periodically, whenever it is thought that business warrants it, a folder accompanied by a postal card and letter to its entire mailing list. These folders are designed to advocate the use of brick in general and Norwood brick in particular. The folders are attractive in design and appearance, containing information of a character which is sure to interest many prospects.

Gets Over 60 Per Cent. Replies from Literature

One of the folders which is reproduced here is the announcement of the opening of a new clay pit at Selma, N. C. This folder was designed with a view to create the impression that the George M. Norwood Brick Co. was doing all in its power to furnish its customers with the best possible clay products. This particular piece of literature was sent to a list of approximately 700 and replies on the return cards were received from about 400 out of this number. This is a remarkable percentage of returns, something like 61 per cent. The complete success of this literature will be appreciated when it is recognized that even very good direct mail literature seldom draws over five per cent. of replies. Ten per cent. is generally considered exceptionally good. The return card enclosed with this literature asks for quotations on clay products. The character of the card may be noticed by referring to the illustrations. To continue in the words of Mr. Moore:

Will Publish Monthly Organ

"Beginning the first of September we are going to publish a monthly organ to be mailed to our list. We try to make some appeal along some particular line, for instance, one folder told about the new clay pit at Selma, another about acquiring the sales of the Seaboard Shale Brick & Tile Co.'s plant. We are installing oil burning equipment at Selma and Lillington, which will be the subject of the next piece of literature. The return postals will give us an excellent method of finding out the exact places to hit, saving a hit and miss method of selling, and in addition give us the cream of the business.

"Our worst experience with the old method of brick merchandising, if such it may be called, was last year. With the plants we had operating, it would have been disastrous to close down. Without a better method of selling we had to compete with others who were in the same position, with the natural result that there were times when brick were actually **given** away. With our new selling policies we have dropped out of the price cutting class.

Is Strong for the Dealer

"We believe one of the main things that has helped to get us out of that class is the development of our dealer policy. This has worked splendidly and is enabling us to keep a steady volume of business coming in and at a good price. Those who wish can say what they desire against a dealer policy of merchandising brick, but we have found it to be very satisfactory and expect to continue it.

"Our course of action has been thoroly justified in the present brick situation. The 'annual price war' seems to be on with manufacturers who are out of orders and are fighting for business. We have plenty of business on our books and at a price which is thoroly satisfactory.

"In developing a policy of this kind, however, there is one thing which we have found absolutely necessary, and that is a good product. Despite our successful selling policy even more care and study is used in the production department than in the others. George M. Norwood personally looks after this department and with his experience in brick manufacturing and as ceramic engineer, our customers are assured of the best in quality."

Literature Is Distinctive

This selling plan of the George M. Norwood Brick Co. should be of interest to every brick manufacturer regardless whether he has ever used a campaign of selling by mail. The success of the campaign is due probably in large measure to the rather "different" type of literature which is sent out. Instead of a more or less commonplace folder filled with generalities about the beauty, durability, economy, and so forth, of brick and clay products, this company has a definite message to give to its customers. One of the folders here reproduced, for instance, is used to announce the fact that the Seaboard Shale Brick & Tile Co.'s product will be handled by the George M. Norwood Brick Co. This is information of real interest to those who read it. The other folder, which brought such remarkable returns, announces the opening of a new clay pit which increases the company's facilities to produce high quality brick. This helps to create the impression that the Norwood Brick Co. is really anxious to produce the highest quality product.

All Manufacturers Can Profit by this Idea

The price cutting evil, while not nearly so prevalent as in years gone by is nevertheless still in evidence in certain sections of the country. Manufacturers who have fairly large plants and to whom a shutdown would mean a considerable loss can find in George M. Norwood's plan of marketing an idea which could well be applied to their business. If this plan is successful in Raleigh, N. C., there is no reason why it could not be equally successful in other parts of the country. Any progressive manufacturer will welcome an idea that will make him independent of the price cutter and to all appearances this direct mail scheme will do the work.

* * *

1921 PRODUCTION AND VALUE OF MICHIGAN CLAY PRODUCTS

In 1921 the total value of brick and tile produced in Michigan decreased by $1,063,772 or 26 per cent. from the amount produced in 1920. The total for 1921 was $2,915,919. Common brick showed a slight increase in quantity (3.6 per cent.) production being 193,730,000 brick, valued at $2,417,809, a decrease in value of $644,851 or 21.5 per cent. The decrease in value is due to the decrease in average price per thousand, from $16.42 in 1920 to $12.47 in 1921. The value of drain tile output decreased 44.7 per cent., from $690,816 to $381,507; hollow building tile showed the greatest decrease in value, the decrease being from $25,486 in 1920 to $8,209 in 1921, a decrease of 67 7/10 per cent.

Make Big Plans for "Ceramic Day"

American Ceramic Society to Meet September 19 in New York on Occasion of National Exposition of Chemical Industries

PLANS ARE BEING MADE by the American Ceramic Society to make its fall meeting of the greatest possible interest to those attending. This meeting will be held Wednesday, September 19, on the occasion of the National Exposition of Chemical Industries, which will be in progress during the week of September 17 at the Grand Central Palace, New York City. September 19 will be known at the exposition as "Ceramic Day."

A larger number of ceramic men is expected this year than have heretofore attended and preparations are being made that will insure a profitable day for the delegates. There will be a technical session Wednesday afternoon, beginning at two o'clock and finishing at 5:30. For this session a most interesting program is being worked up by the secretaries of the industrial divisions of the American Ceramic Society. This program has not proceeded far enough at this time to give the names of those who will read papers and the topics that will be given, but these details will be announced shortly from the office of the society.

Dinner at Hotel Commodore

After the session members of the American Ceramic Society will dine together at the Hotel Commodore, giving an opportunity to renew and to make further acquaintances with ceramic men and to exchange experiences with those who have been wrestling with the same factory problems. This dinner will be entirely informal and no set speeches have been scheduled. After the dinner it is planned to devote the balance of the evening to a sightseeing trip thru the chemical exposition.

Among the booths at the exposition, which include exhibits of almost every kind of chemical equipment, there will be much to interest the ceramist. The new developments in apparatus and equipment exhibited will prove valuable to those who can see them. There will be exhibited new methods of handling and treating materials; new furnaces and furnace control devices; new products and new uses of products, knowledge of which has been worth many times the cost of the trip to New York to several ceramic concerns that in the past have sent delegates to the fall meeting of the American Ceramic Society.

Will Discuss Research

A great variety of industrial and educational motion pictures will be shown during the exposition, including "The Story of Fire Clay Refractories," a film made by the United States Bureau of Mines with the cooperation of the Laclede-Christy Clay Products Co. at St. Louis.

Results of the research work done by the four heavy clay products associations in cooperation with the United States Bureau of Mines will be discussed. Methods and equipment necessary to effect economy in burning as brought out during the kiln investigations will be demonstrated. The research work of the refractories manufacturers will also come in for a share of attention.

* * *

ADAMS DEFENDS THE BRICKLAYER

J. M. Adams, secretary and general manager of the Ironclay Brick Co., and president of the American Face Brick Association, declared figures presented by several contractors in Columbus, Ohio, in which they estimated it cost five cents a brick to build a wall there, were in error. Mr. Adams also took issue with the contention of the contractors that the present bricklayer is only about 40 per cent. as efficient as before the war.

Mr. Adams, who is in touch with brick men from Maine to California, said:

"Recently published statements that it cost five cents to lay each brick in Columbus and that bricklayers are only placing 600 brick a day in a wall are incorrect. We knew they were wrong when it was published. But we investigated, and our inquiries show the case is not nearly as desperate as pictured.

"A good bricklayer lays today in the average nine inch wall from 1,000 to 1,300 brick, or from 400 to 450 face brick, with an equal number of ordinary brick to back them up.

"The recently published article says that bricklayers today are laying 600 brick, as against 1,500 to 2,000 formerly. A good bricklayer today will lay just as many brick today as formerly. Don't forget that bricklayers are working eight hours a day where they formerly worked ten hours.

"Today we don't have the thick heavy walls formerly built. So all the work shows up on the outside, and must be done with care. There was the day of the 17 and 18 inch wall. In those days inside bricks were virtually tossed into place, and mortar shoveled about them. Today thick walls have been replaced by concrete and steel beams and we have thinner and more carefully constructed walls. Your bricklayer today is more than ever an artist, and better art demands better wages.

"It requires from 1¼ to 1½ pounds of mortar to each brick. Thus, counting it at the maximum, 1,000 brick will require 1,500 pounds of mortar, 1,000 brick will cost $3.75 rather than the $5 and $6 as stated. The bricklayer on the average today is as efficient as he was ten years ago. In war time there may have been a little slowing up, but that does not prevail today.

"The shortage of bricklayers is due to the fact that the national union has established a three-year apprenticeship period. In Ohio it is four years. The average young man is not willing to accept small pay, for four years, even to get the high wages being paid bricklayers. It seems to me a man could learn to lay brick in less than three years. If this were changed we would get a better supply of help, thus eliminating the bonus and overbidding systems. Brickmen are now doing all they can to educate bricklayers so brick can be laid without paying inordinate figures.

"I note in the published article bricklayers are learning the trade in six weeks. This is not true. Anyone can see that if it were, the labor market would be flooded with bricklayers."

* * *

SOUTH'S BUILDING TOTALS HUGE

There is reported to have been some improvement the last half of August in operations at the brick and clay products plants of the Southeast, due to the fact that construction thruout the district has been assuming greater activity with a resultant increase of late in the demand for nearly all burned clay products. A majority of the southeastern plants still seem to be fairly well sold ahead and demand is on an improved basis with most plants having about as much business for immediate delivery as they can well take care of. The outlook for the coming fall is the best it has been in years for this season of the year.

Some idea of the immense amount of building that has been carried out in the southern states this year is shown in the semi-annual report of the G. L. Miller Co., of Atlanta, Ga., issued recently, this company being one of the largest in the South devoted to the financing of new construction. The company's report for the first half of 1923 shows a total of $302,441,708 in construction in the South, listing the total valuation of building permits issued in 127 cities and towns thruout the section. This is by far greater than the first six months of 1922, and probably the largest figure that has ever been reached for a six month period in the South.

The company further states that, regarded as a whole and including the cost of brick and other building materials, construction costs in the southern states are now approximately 25 per cent. less than they are in the North and East.

* * *

STEADY PAVING BRICK PRODUCTION

Continued steady production of vitrified paving brick indicates a healthy business condition in the industry, and continued active brick street and road construction work during the balance of the season.

The July statistical report covering 68 per cent. of the normal tonnage capacity of the industry, just issued by the National Paving Brick Manufacturers' Association, shows production and shipments keeping pace with those of previous months.

Production for July was 30,529,000 and shipments 27,092,000 compared with production during June of 31,105,000 and shipments of 27,251,000. Stock on hand of 78,835,000 brick is reported.

July shipments were made into 30 states and Canada, with Ohio leading in consumption followed by Illinois, Texas, Iowa, and Pennsylvania in the order named.

* * *

BRICK HOME PRICE INDEX HIGHER

The index of the cost of building materials entering into the construction of a six room brick house, at 217 for July on a 1913 base, compares with 215 for June and 184 for July a year ago. For a six room frame house the index for July is 214 as compared with 212 for June and 181 for July, 1922.

* * *

CEMENT PRODUCTION GAINING

Production of Portland Cement in July was somewhat greater than in June and more than one million barrels greater than in July last year. Total production for the month was 12,600,000 barrels, according to the United States Geological Survey. For the first seven months of 1923 production was very close to 75,000,000 barrels, an increase of more than 28 per cent. over the best previous record for that period. Shipments from the mills during July amounted to about 13,700,000 barrels, an increase of 400,000 barrels over June.

* * *

FIRE BRICK PRODUCTION IN JULY

Production of clay fire brick as reported by the Refractories Manufacturers Association dropped from $61,165,622 in June to $56,976,868 during July. There were shipped during July $54,607,581 while stock remained practically at the same level as during the previous month. New orders received showed a gain in July over the previous month of almost 1,000,000 fire brick. Unfilled orders during July dropped 9,400,000 to 79,926,489. Production of silica brick also decreased slightly, a total of 11,980,788 being reported for July as against 12,608,422 for June. Stocks on hand were practically the same during July as in June, while shipments varied but a trifle, being somewhat less in July. Unfilled orders showed a drop of approximately 4,000,000 while new orders received dropped almost 2,000,000.

* * *

SOUTH SECURES RATE SUSPENSION

Thanks to the combined efforts of the brick and clay products industries of the South, the proposed increases in freight rates on clay products that were to have gone into effect thruout the southern states on August 15, were cancelled at the last minute by the Interstate Commerce Commission, and will be regarded as suspended until such time as the commission is able to make a further investigation of the situation in the South.

As previously stated in Brick and Clay Record, the increases that had been ordered by the commission were regarded by the clay products industries in the South as almost disastrous, and in many instances might even have threatened the life of some of the smaller companies.

In its order suspending the rates the commission makes the suspension only temporary, stating that they will go into effect on December 13, 1923, unless otherwise ordered. In the meantime, however, an investigation is to be conducted, and the affected industries in the South are preparing to present a mass of data at such hearings as will be held by the commission, seeking to have the proposed schedule suspended for good. That such increases would have a considerable effect on building in the South, due to the fact that they would necessitate material increases in brick prices, will be one of the principal reasons offered by the southern industries as to why the rates should not be allowed.

* * *

OUTPUT DECREASES—POWER USED INCREASES

Since 1869 production in the brick and clay products industry has not kept pace with increase in wage-earners and power employed, according to conclusions reached by the National Industrial Conference Board. The average cost of industrial labor rose from $20.71 per month in 1849 to $76.50 in 1919, an increase of 368 per cent.

* * *

R. M. A. TO MEET IN COLORADO

The four-reel motion picture film depicting the various processes which go into the manufacture of refractory brick and the uses to which this material is put, will be shown in the auditorium of the Broadmoor Hotel at Colorado Springs on the evening of September 11, when the meeting of the Refractories Manufacturers' Association will be in full swing.

This film, which was described in a recent issue of Brick and Clay Record, was made by the U. S. Bureau of Mines, in cooperation with the Laclede-Christy Clay Products Co., of St. Louis.

A large number of representatives of prominent refractories manufacturers have decided to go to the meeting by way of Chicago, where they have been assigned a private Pullman car over the Rock Island Lines. This car will be attached to the train leaving Chicago at 10:00 a.m., Sunday, September 9.

* * *

WANT LOWER MAGNESITE DUTIES

Petitions for reduction of the duties on crude magnesite, caustic calcined magnesite and magnesite brick were filed with the Tariff Commission by four Austrian companies. The commission has set October 4 as the date for the hearing of the applications.

Correct Methods of Farm Drainage

An Article Telling Exactly How the Farm Lands Should Be Tiled to Produce Best Results—It Gives the Drain Tile Manufacturer an Opportunity to Be of Real Service to His Customers

H. B. Roe

In Charge of Drainage Activities of the University of Minnesota, Department of Agriculture,
University Farm, St. Paul.

Editor's Note: H. B. Roe, the author of this article, has had considerable experience in drainage work as an engineer and during the last few years has been instructor on the subject at University of Minnesota. In preparing these articles for Brick and Clay Record, Mr. Roe has digested a vast amount of literature in addition to giving the best of his experience in an effort to incorporate only the very best and proven methods of drainage. Every drain tile manufacturer should keep a copy of this as well as the September 18 issue, which will contain the second part of Mr. Roe's article, in a handy place for constant reference.

Part I. SURVEY AND DESIGN

A COMPLETE PLAN based on proper design is the first essential in farm drainage, altho the actual installation may be but a few lines at a time. The plan should be made by a competent drainage engineer whose business in life is properly to design, plan and construct drainage systems. The farmer who intends to put in extensive drainage cannot afford not to employ the best possible engineering service and such service is relatively inexpensive. For example, in Minnesota the cost of engineering and superintendence including, also, clerical and other minor overhead expense for complete tile drainage averages about 8¼ per cent. of the total cost of the system. This is a low rate of insurance to pay on an investment the material evidence of which is buried in the ground, and this charge comes but once, while a good drainage system brings returns year after year indefinitely. A competent engineer fully understands the factors that must be studied and what influence each should have in proper design. The engineer can, therefore, usually earn his fees many times over by the saving he effects in placing the tile to the best advantage. The farmer would not act as his own attorney and it is equally unwise for him to expect to be his own engineer or to have his tiler so act.

Design of a Drainage System

Design includes the determination of the proper depths, rates of grade, location and capacity of all drain lines and the proper type and location of all surface inlets, catch basins, grade reducers, and outlet protections.

Essential Factors. The essential factors in proper drainage design are:

The outlet; its capacity and depth below the mouth of the drainage main;
The area; character of surface and shape of the watershed;
Ruling grades obtainable;
Character of soil and subsoil;
Rainfall;
Purpose of the drainage system.

(1) *The Outlet.* The best outlet gives a free fall and continuous flow from the main, permits a good fall in the main and a depth of main just sufficient to receive properly the flow from all laterals. Failure to secure such an outlet is apt to flood the mains, stop the action of the tile drains and so destroy the value of the entire investment.

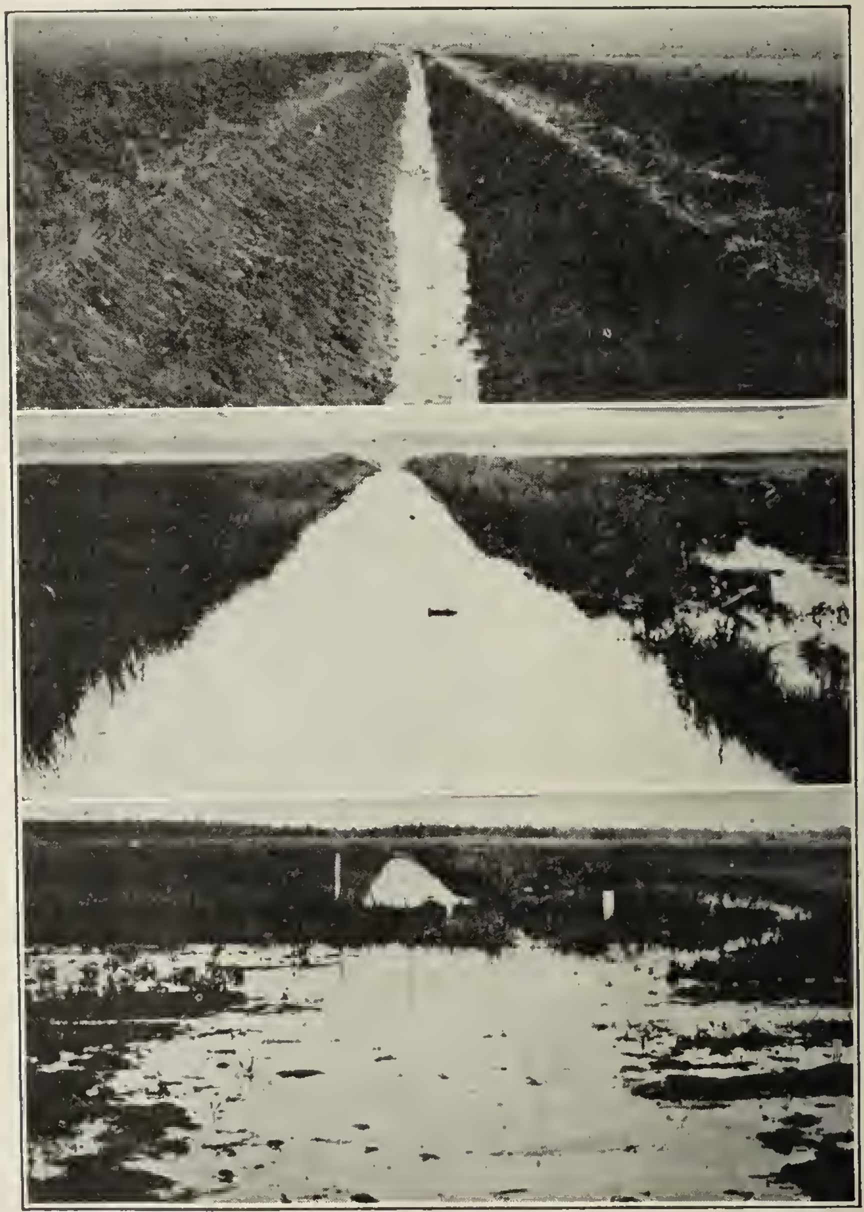


Fig. 1. Drainage Main and Adjacent Fields at Peat Experimental Farm, Coon Creek, Minn. Before and After the Flood of June, 1920. Above—A Well Built Ditch But Too Shallow, the Outlet Channel Being Insufficient. Center—The Same Ditch as Above, June 15, 1920. The Waste Bank of the Outlet Channel Can Be Seen in the Center Distance. Below—Showing the Effect of the Flood. The Crops Were Entirely Destroyed, Altho the Land Is Completely Tiled.

Permanently submerged or so-called forced outlets are not outlets as they do not permit any drainage action below the level of the surface of the submerging flood and this flood

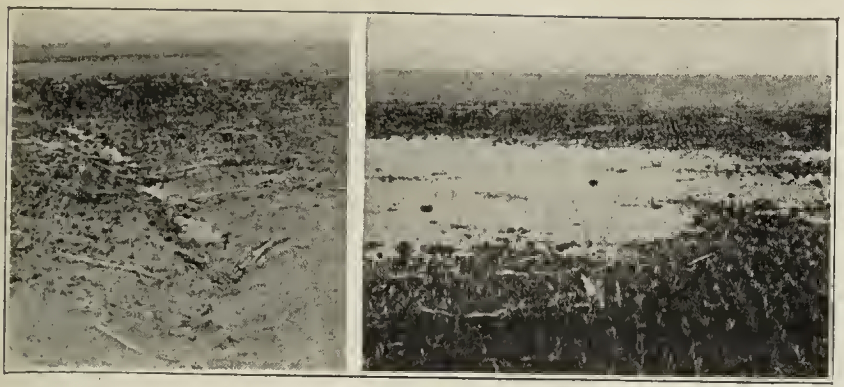


Fig. 2a and 2b. Showing on the Left a V-Shaped Flood Ditch Functioning After a Rain. On the Right, a Condition Which the Flood Ditch Prevents. Water Standing on Crop After a Rain.

seriously hampers the escape even of the water coming from still higher lands. Where such outlets have been used the system would have worked better and been more economical if the tile had been stopped farther back at a level sufficiently high to have permitted free flow from it out onto the surface of the lower ground.

Minimum Depth for Outlet Ditches. In a flat country, open ditches, for efficient service as outlets for tile drainage, should have a minimum total depth of eight feet. The disastrous effect of an outlet of insufficient depth and capacity is well illustrated by the experience on the Peat Experimental Farm at Coon Creek, Minn., in 1920. (See figure 1.) The channel of Coon Creek furnished the only available outlet for the tile drainage system but the capacity of this channel is utterly insufficient to carry the flood waters from its own drainage basin of many thousand acres. After heavy rainfall late in June the flood waters overflowed the creek banks and backed up for days over the experimental fields, drowning out crops, choking the drainage main and completely nullifying the action of the tile drainage system which had been installed with unusual care.

(2) *The Area, Character of Surface and Shape of the Watershed.* The watershed is a great funnel whose rim is the ridge surrounding it and whose snout is the drainage main. The snout of a funnel must carry all the water that falls within the rim of the funnel. It is clear that the flood water will reach the snout much more rapidly if the watershed be long and narrow with steep smooth slopes bearing only sparse vegetation than if it be broad and relatively flat, covered by

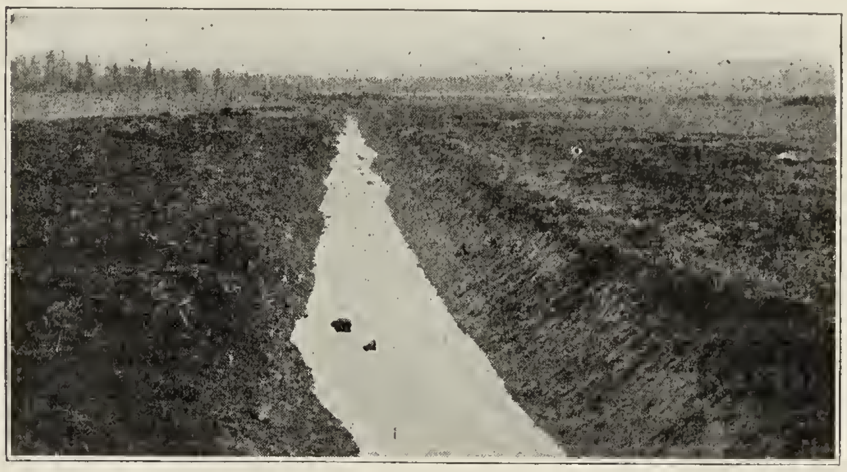


Fig. 3. A Small Standard Ditch with Three Foot Base, Average Depth 3½ Feet and 1½ to 1 Slopes; Dug by Team and Scraper; Sloped by Hand; Waste Banks Spread. An Effective Carrier of the Surface Flood from About 80 Acres of a Farm in St. Louis County, Minn.

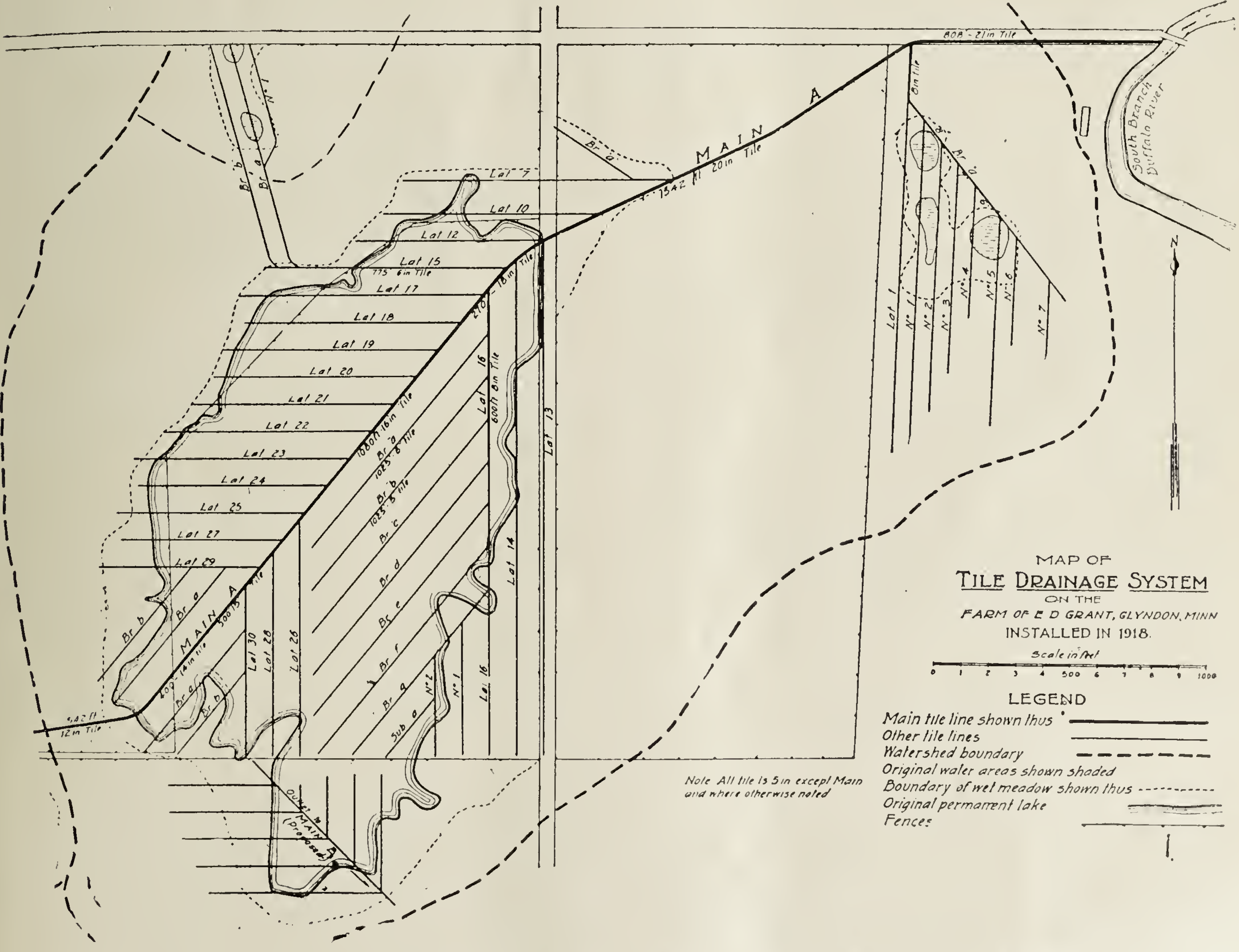


Fig. 4. An Existing Tile Drainage System in Clay County, Minn., Showing Typical Design for Flat Land.

dense vegetation and lacking definite natural flood channels. Open soils too will check this flow much more than will a rocky surface or one of tight clay soil. It is evident, then, that these conditions have great influence in determining the proper size of drainage mains and submains.

(3) *Ruling Grades Obtainable.* As water naturally runs down hill, other things being equal, the steeper the hill the faster the water will run. Hence, it is clear that the rate at which a tile of a given size will carry water depends largely upon the rate of fall in the tile line. This must not be interpreted to mean that a tile of a given size with a fall of one-tenth of a foot in 100 feet will carry just half as much water as a tile of the same size with twice as rapid fall. About the lightest fall from which it may usually be expected to obtain satisfactory results with tile is one-tenth of a foot per 100 feet. This is also a good self cleaning grade in an open outlet ditch.

Character of Soil Important

(4) *Character of Soil and Subsoil.* A coarse, or sandy soil permits water to pass thru it much faster than a fine, tight soil like clay or gumbo. It is therefore clear that the character of soil would very largely determine the rate at which water would reach the drains and the proper depth and spacing of ditches and tile lines, and therefore what capacity they must have to carry the water from a given area.

(5) *Rainfall.* After ridges have been cut thru and outlet mains installed so that the impounded water has had a chance to drain out, the water that a drain must carry away is only that from rain or snow fall. The important thing that drainage must accomplish on cropped lands is to carry off the excess water of a single storm of a few hours or a day's duration whether it be in the form of surface flood or of excess of soil moisture. Hence drainage mains and submains should be designed on the basis of the amount of water they are required to remove in 24 hours.

What Drainage Can Do

(6) *Purpose of the Drainage System.* Wild land, too new to justify immediate extensive subdrainage, and land with too shallow an outlet for successful tiling for general farming, may still be converted, at low cost, into profitable pasture or hay meadow by a carefully located system of surface flood ditches aided in some cases by the judicious placing of a few shallow tile lines. On the other hand in established farming districts where the natural condition of the land or the extent of its development seems to justify a considerable investment to improve the quality of the soil in the reasonable hope of considerable gain in the quantity and quality of crops and of a marked improvement in ease of field operations, a very complete tile drainage system may be the only type to employ.

Real agricultural drainage is the removal of excess water from the soil. Tile drainage is the only practical means to accomplish this and where there is an adequate outlet tile drainage always pays if put in right and good tile is used. Frequently, however, depth, grade, and outlet conditions require some open ditching in connection with tile to accomplish real drainage, but the purpose of such an open ditch is either to serve as an outlet channel or as carrier of excess surface floods to relieve the tile drains of an overload and so prevent the impounding of water and the drowning out of crops.

Open Ditches and Their Design

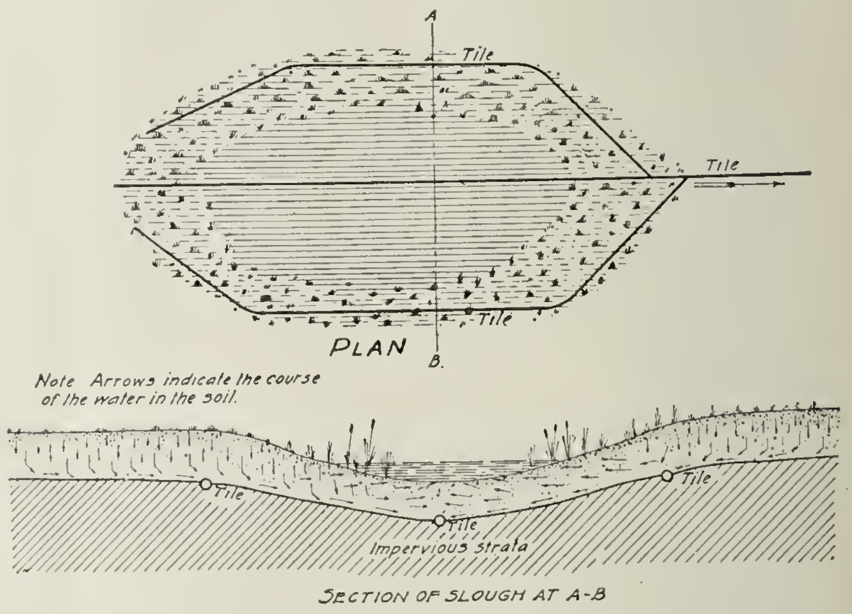
(1) *Narrow Base.* The nearer V-shaped a ditch, other things being equal, the more freely the water will run. Hence the narrower the bottom of the ditch, as a rule, the more efficient it will be. In ditches with a wide base a small amount of water spreads out in a thin sheet so that friction on the bottom seriously checks or entirely stops the flow.

(2) *Side Slopes.* The steepness of the side slopes should be suited to the character of the soil and care should be taken to make the slopes smooth so as not to obstruct the flow of the water. Fibrous peats and hard clay will often stand nearly vertical. Ordinary loam soils usually require ditch slopes of 1½ feet horizontal run to one foot vertical rise or flatter. Ditch slopes in sandy soil or clear sand must be two or three to one or flatter. Slopes too steep for the kind of soil are cut by the flowing water and the eroded earth fills the ditch more or less rapidly or forms mud bars that check the flow of the water.

(3) *Grades of Ditches.* Grades of ditches should also fit the character of the soil to prevent undue washing. The rate of flow along any part of a ditch should not be greater than at a lower point, otherwise sediment will be deposited in the slacker water and cause a filling up of the channel.

Broad "V" Is Best Open Ditch

(4) *Best Type of Open Ditch for Farm Drainage.* Large outlet ditches are usually of a public character and provided for by statutory process. Their use is largely outside the limits of the individual farm and therefore beyond the scope of this discussion. The type of open ditch generally best suited to the drainage needs of the individual farm is the broad shallow V-shaped ditch which is easily and cheaply dug and maintained and which may be farmed right across without inconvenience. It is usually possible and desirable to connect into a chain the numerous shallow land locked pockets almost always present in flat country by a series of wide, shallow V-shaped ditches leading toward and finally outletting into highway ditches or other outlet channels. Such flood ditches should be only deep enough to reach the bottom of all pockets except that they may be deepened slightly if necessary as they proceed toward their outlets, to secure the needed fall. Such a system of ditches keeps the flood water from heavy rainfall moving slowly off and this prevents its impounding in the numerous pockets, drowning out the crops, and overloading the tile drains. (See figure 2.) This type of ditch also serves as a good intercepting ditch to carry off the flood water from high land before it has a chance to spread over and drown out the adjacent fertile low land.



Note Arrows indicate the course of the water in the soil.

SECTION OF SLOUGH AT A-B

Fig. 5. Illustrating Method of Tile-Draining a Pocket.

(5) *Spreading of Waste Banks.* The excavated material from open ditches should not be piled up in waste banks alongside to catch weeds and nullify the action of the ditch but it should be spread out in a thin layer over the adjacent fields. Handled thus it does not in any way interfere with field operations or impede the growing of crops. (See figure 3.)

Tile Drainage Design

Depth and Spacing of Tile Lines and Size of Tile Required. The considerations heretofore discussed are the main factors in determining the proper location and depth of tile lines and the size of tile required for mains and submains, but there is no simple rule for figuring this out. It is part of the job of a technically trained drainage engineer. A general idea of the size of tile to use and of the required depth and spacing may be had from Table I. In the use of this table, however, it should be remembered that open soils on the one hand and tight soils on the other, require very different run-off factors from those used in the table. This table is therefore limited in scope and should be used with reserve and for approximate results only.

TABLE I

AREA DRAINED BY DIFFERENT SIZES OF TILE WITH AVERAGE FARM GRADES AND IN LOAM SOILS

Size Tile—Inches	Acres Drained
5	5 to 7
6	8 to 12
7	12 to 20
8	20 to 30
10	55 to 85
12	90 to 140
14	140 to 225
15	170 to 270
16	200 to 315
18	280 to 440

Minimum depth recommended for small laterals 3 to 3½ feet

Minimum fall recommended: 1¼ inches per 100 feet —that is 1/10 of one per cent.

Spacing of laterals in parallel systems: 65 to 200 feet, depending on tightness of soil

100 feet (about six rods) common successful practice in most prairie soils

NOTE: Use of four in. tile not recommended. Peat drainage requires 4 to 5 feet for average cultivated crops.

Some Common Tile Drainage Problems. Proper design of tile drainage systems will vary considerably according to soil encountered and type of crops to be raised. Most of the cultivated grass crops will do well with a depth of drainage of only about two feet. Most of the general field crops, such as corn, or the standard small grains or forage and root crops require a drainage depth of 3 to 3½ feet. Alfalfa requires a deep root bed.

In peat lands the depth of the lines must vary not only according to crops raised but according to the degree of possible water control and fire hazard between land 5 feet and the spacing from two rods upwards. Peat holds its moisture tenaciously.

Some Drains Should Be Seven Feet Deep

In orchards and vineyards and for that matter for small fruits as raspberries, currants and the like, the drain lines must be deep, not less than four feet and up to seven feet or over. The spacing in this case will be largely governed by the planting scheme, a good system in orchards being a line of tile in the center between each two lines of trees or bushes or at least every other line, all leading to a main or outlet ditch, the location of which is made to fit in efficiently with the best economy of the rest of the system. On flat lands mains and submains should be located along natural water courses where such exist or otherwise along the general lines of greatest natural depression. Irregularity of lines will not seriously affect efficiency if the bends be made by long smooth circular curves. The laterals should, as a rule, be laid out according to some regular parallel system with the depth conforming to the carrying conditions of crops and soil previously discussed. Spacing of tile lines on flat prairie land has varied, with good result, according to density of soil, from 33 feet to upwards of 500 feet. Common successful practice as a rule varies from about 65 to about 200 feet. (See figure 4.)

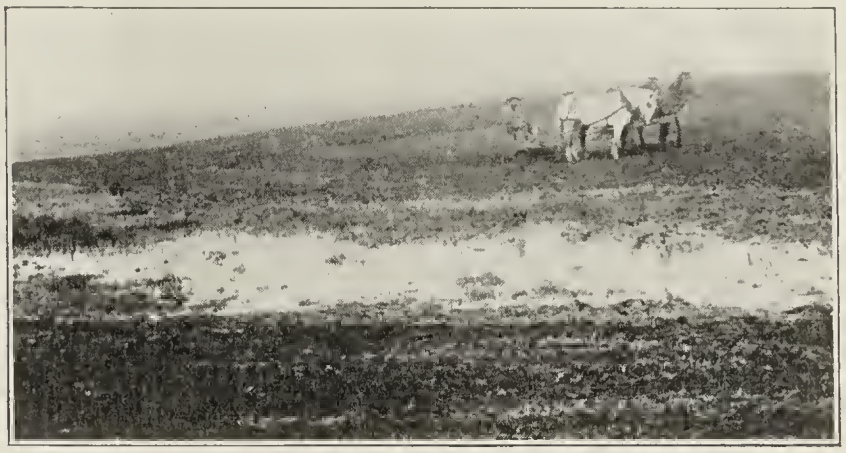


Fig. 6a. A Seepage Pocket on a Field Slope.

Landlocked marsh pockets and running sloughs with side bands of impervious subsoil and too shallow or too flat to drain naturally, conditions very common in agricultural regions, are best handled in the manner shown in figure 5, the side lines being in a location conformable with proper depth, so that they can readily catch the seepage water before it starts to break thru to the surface.

Seepage Areas. Where bluffs and slopes or low land at their base are wet due to seepage from higher, porous, and water bearing levels, the cure is indicated in figure 6b. Tile lines run, as shown, along the foot of the slope at the right location and depth to catch the seepage water before it breaks thru to the surface, carry it to a main or direct to the outlet ditch. This may be all that is needed to reclaim the fertile low land. If one such tile line does not catch all the water, a second line a few feet from and parallel to the first probably will.

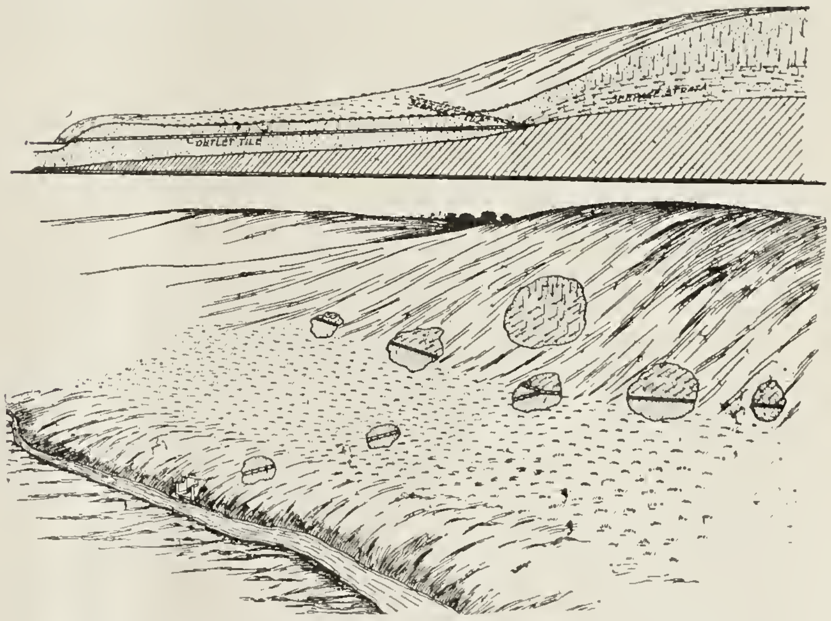


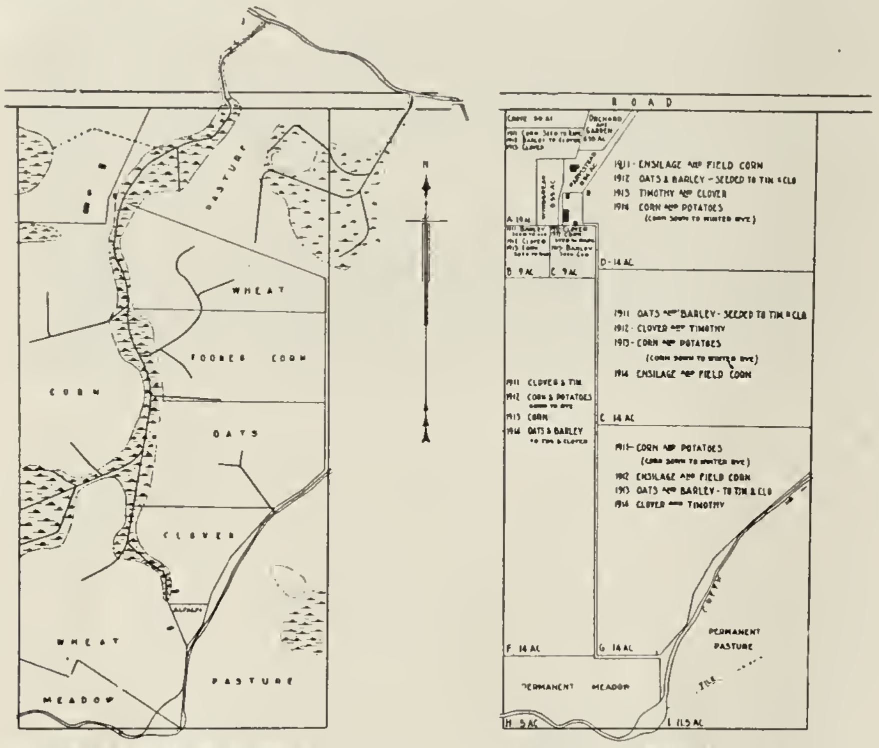
Fig. 6b. The Remedy for the Condition Shown Under 6a.

Rolling Land Interspersed With Marshes. In the case of rolling country requiring drainage, the mains and principal laterals should follow the general lines of the natural surface drainage. These should be supplemented by combination with the two preceding methods. (See figure 7.)

Construction Survey

Before the ditching can be done the drain lines must be staked out on the ground.

Stakes. Two kinds of stakes are needed, marker stakes and hub stakes. The marker stakes should ordinarily be about two feet long and 1½ to 2 inches wide, preferably of soft wood surfaced on two sides so that they can be readily marked upon with lumber crayons. A good quality of four foot pine lath cut in two and the half lath pointed at one end makes a very acceptable marker stake for farm tiling work but lath are scarcely strong enough for slope stakes on open ditch work. Old inch boards free from nails and surfaced two sides, if cut to the proper length and width, make the most satisfactory general purpose marker stake. Where the tile lines run thru tall grass or grain full length lath make a very acceptable marker and such extra long stakes in such cases should be put at the beginnings and ends of curves and as often as every fifth station on straight lines with shorter stakes at intervening stations. Hub stakes should be made 8 to 12 inches long, pointed at one end and square sawed at the other, of one inch or two-inch lumber, sound and tough so as to withstand hard driving without burring the tops. In the bottom of pot holes and in swamps and peat bogs longer hub stakes are usually necessary. It is always well when such spots exist to make about a quarter of the hubs from 18 inch to 4 feet in length, for the hub stake, to be of value when in place must be sufficiently solid so that it will not settle under pressure of the step of any ordinary farm animal as on the tops of the hub stakes, driven solid and nearly flush with the ground, the engineer takes the exact levels from which the grades and cuts to bottom of excavation are determined. The character, position and use of the two types of stake are shown in figures 8 and 9.



AN 80 ACRE FARM IN SOUTHERN MINNESOTA SHOWING THE SWAMPY IRREGULAR CONDITION OF THE FIELDS BEFORE DRAINAGE AND THE TILE SYSTEM INSTALLED IN 1909

THE SAME FARM AS THE FOREGOING SHOWING THE UNIFORMITY OF THE FIELDS AS MADE POSSIBLE BY THE DRAINAGE, IN THE FINAL CROPPING PLAN PERFECTED IN 1914

A TYPICAL TILE DRAINAGE SYSTEM FOR ROLLING LAND.

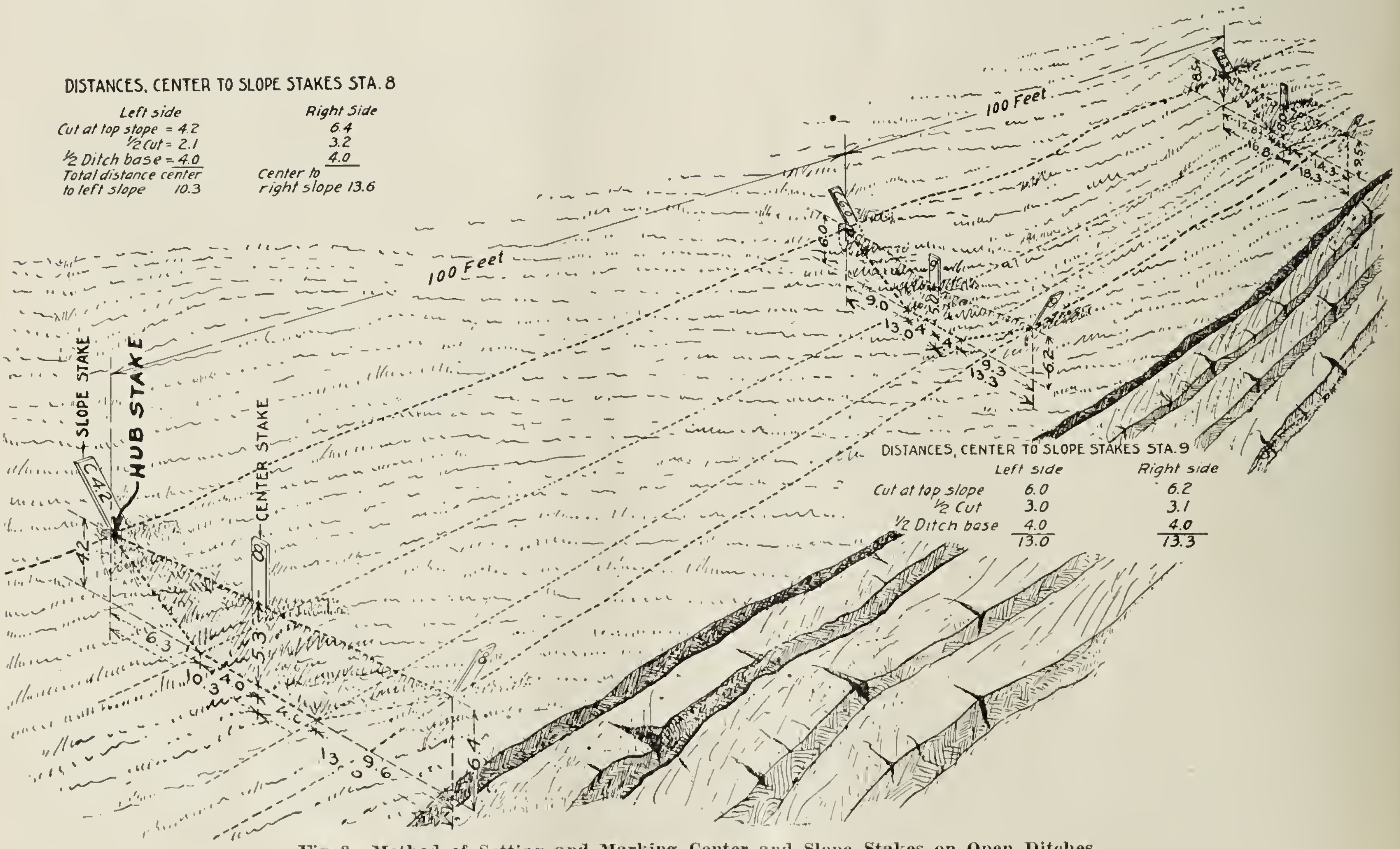
NOTE: THE INCOME FROM THIS FARM INCREASED PRIMARILY AS A RESULT OF DRAINAGE FROM $994 IN 1908 TO $2455 IN 1912

Fig. 7. A Typical Tile Drainage System for Rolling Land.

Staking Out Large Standard Ditches

Large standard ditches should be staked as shown in figure 8. Center and slope stakes should be set at least every 100 feet on straight lines and every 10 to 50 feet on curves.

Hub stakes should be driven by each slope stake on one side only, of the ditch. These should be on the same side thruout the system unless there is especial reason for placing them otherwise. The object of these hub stakes is the same as in the tile drainage work. Exact levels may be taken on the tops of the hubs and from these exact levels the ditch grades and a list of cuts from tops of hubs to bottom of finished ditch and distances from slope stake to center stake may be worked out and furnished the grader so that from these he may set targets as in tiling by which either to grade or to test the grade of his ditch.



DISTANCES, CENTER TO SLOPE STAKES STA. 8

	Left side	Right Side
Cut at top slope	= 4.2	6.4
½ Cut	= 2.1	3.2
½ Ditch base	= 4.0	4.0
Total distance center to left slope	10.3	
Center to right slope		13.6

DISTANCES, CENTER TO SLOPE STAKES STA. 9

	Left side	Right side
Cut at top slope	6.0	6.2
½ Cut	3.0	3.1
½ Ditch base	4.0	4.0
	13.0	13.3

Fig. 8. Method of Setting and Marking Center and Slope Stakes on Open Ditches.

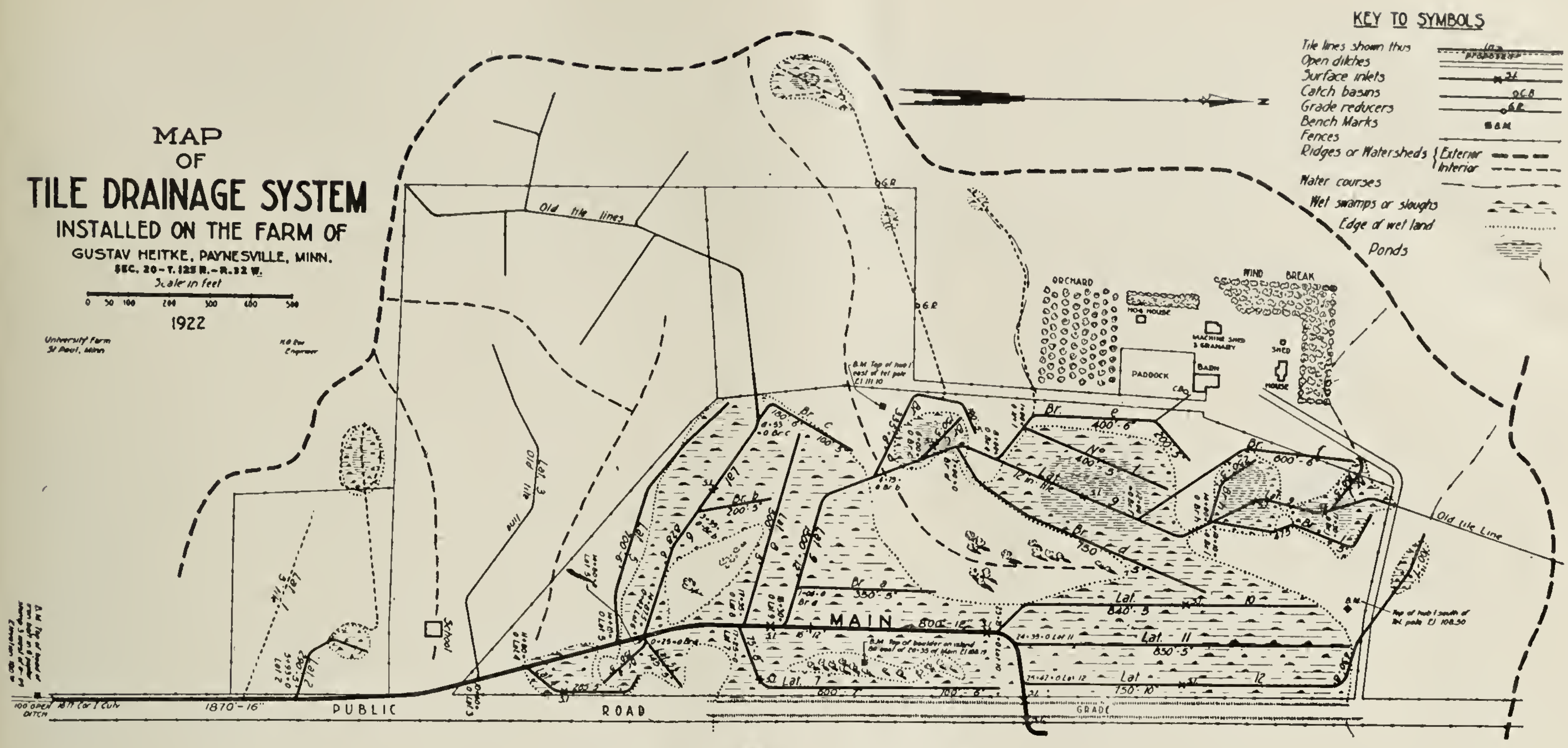


Fig. 10. Type Map of Farm Drainage.

The stake number should be recorded on the fronts of center stakes and on the backs of slope stakes and the cut to the nearest one-tenth of a foot should be marked on the backs of center stakes and the fronts of slope stakes. (See figure 8.)

Staking Out Small Ditches and Tile Drains

V-shaped flood ditches seldom need to be staked out. They can be run out and dug by eye as it is not usually necessary on such ditches to follow very exact grades and they can be quickly tested for pockets after they are dug by running levels over them. For intercepting ditches, a single line of marker stakes along the lower side and without hub stakes is all that is needed. Small standard ditches whose top width does not exceed three or four feet, and tile drains should be staked as shown in figure 9, a single line of markers and hub stakes being all that is needed. These should be 100 feet apart along the line on straight lines but only from 10 to 50 feet apart on curves, and at all junctions of drain lines. The numbering of stations begins with zero at the outlet and proceeds continuously upstream. The station number and name of a junction should be plainly printed on its own marker stake, thus: Main 7+65=0 of Lateral 3. Ends of lines should be so marked. The locations of all surface inlets, catch basins, grade breakers and the like should be shown by special stakes plainly marked to show what they stand for.

The engineer should furnish the owner a complete map of his construction survey carefully drawn to a convenient scale to be filed as a con-

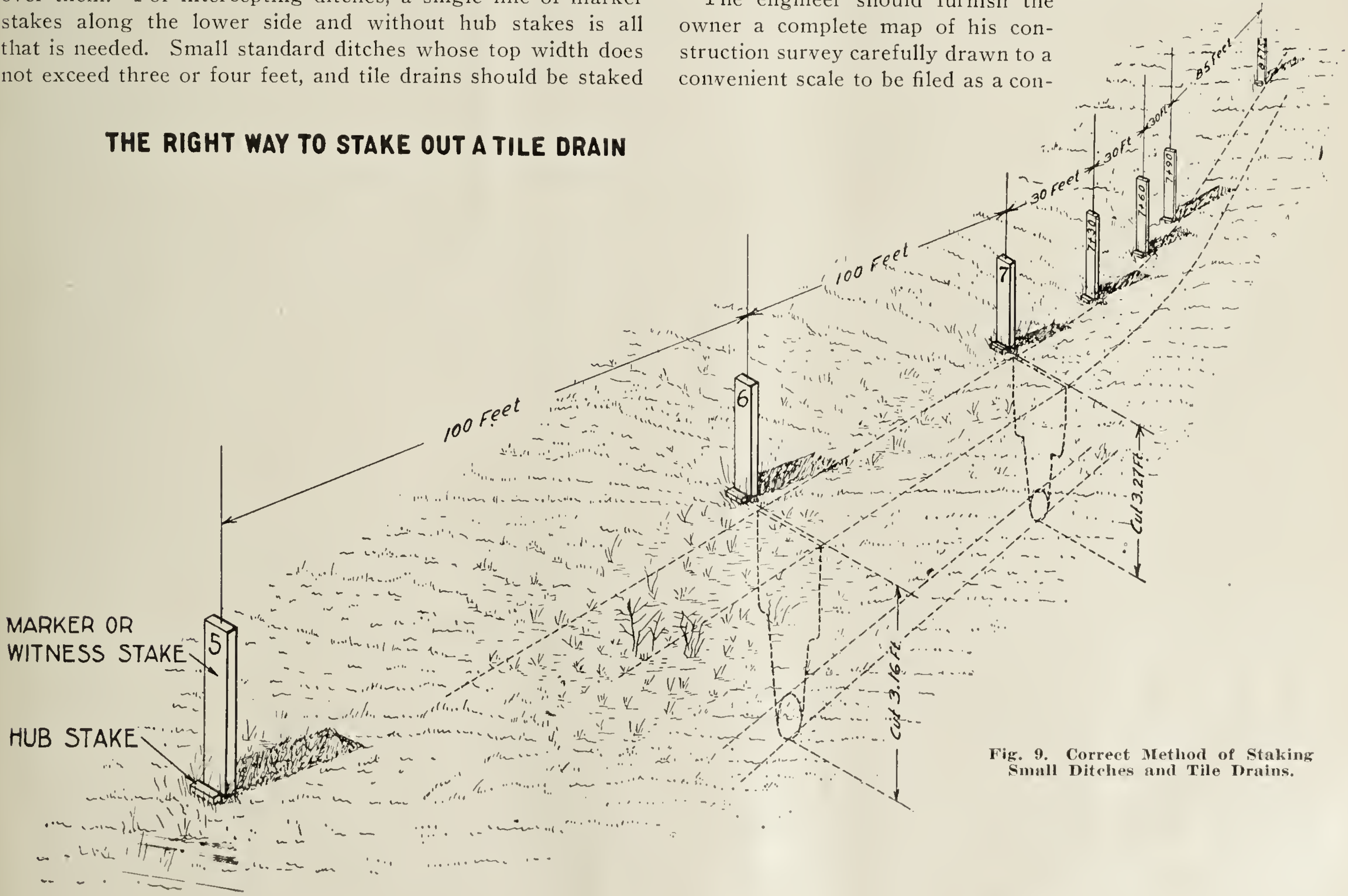


Fig. 9. Correct Method of Staking Small Ditches and Tile Drains.

venient record for future reference by the farmer. (See figure 10.) He should also furnish a list of all cuts from hubs to grade, tabulated as to line and station, points of changes of grade and rates of grade being also plainly shown. Specifications for tile and specifications for doing the construction work should also be furnished.

Things the Farmer Can Do Himself to Save Expense

Before Engineer Comes

Study his fields and drainage and mark,

1. Low spots and pockets; 2. Low natural water courses;
3. Ridge or boundary of watershed.

Install system of shallow broad surface ditches from pocket to pocket to prevent impounding of water.

Dig test pits thru soil and subsoil to find character of digging.

Run the mower over principal drainage ways that are covered with standing hay or grain.

Prepare stakes and hub stakes and stack in convenient places.

During the Survey

Help with the chaining and stake work on survey.

Protect stakes once set (with a piece of tile set over each stake or by driving a heavy guard stake alongside of each marker, being careful not to disturb the hub.

RECEIVING MORE FOREIGN ORDERS

Foreign shipment of southern made brick out of the various Southeastern ports during August was on a more active basis than July or June, with present indications giving every promise that there will be a continued activity in brick export trade for the industry in the South the rest of the year, according to information from the Atlanta office of the Bureau of Foreign and Domesic Commerce. Manufacturers interested in further expansion into foreign markets are asked to get in touch with the bureau, which is located in the Chamber of Commerce Bldg., Atlanta, Ga.

PAVING BRICK WINS AGAIN

Whenever a city uses different types of paving, keeping accurate record of the cost of repairs and upkeep, it is invariably the brick paving which wins out and gains the approval of the city engineers as well as the tax payers. A striking example of this is offered by the city of Des Moines, Ia. The Des Moines Capital has the following to say about paving brick. It speaks of brick pavements which have been laid in Des Moines during the last 33 years.

"Figures compiled by the engineering department show that brick is the cheapest material regardless of the amount or class of traffic.

"Under all kinds of traffic brick pavements investigated showed an annual cost per square yard of 7.28 cents, bitulithic cost 18 cents, asphaltic concrete 16.12 cents, and asphalt 13.15. Concrete cost only 6.68 cents but there has been so little used and it has been down such a short time that Street Commissioner Mitchell does not consider the figures conclusive."

Valuable Hints on Drainage in Iowa Soils

"PROBABLY NO OTHER CONDITION essential for successful crop growth is so well known as drainage and yet it is often overlooked," says a bulletin recently published by the Iowa State College of Agriculture and Mechanical Arts. "Soils which are too wet will not produce satisfactory crops and no other treatment will bring about any beneficial effects on such soils. Where the conditions are extreme, such as on ponded acres, or on land where water accumulates and stands long after every rainfall, the need for drainage is easily recognized. Many thousands of acres in Iowa have been reclaimed from a condition which absolutely precluded any crop production, by the installation of drainage ditches and tile. Some of the most fertile areas in the state, at the present time, were wet, untillable areas, or even ponds or lakes a few years ago before they were drained.

"But there is much land in the state which is still in need of drainage. Many soils are heavy in texture, level in topography, or underlaid by a stiff, impervious clay subsoil, and as a result are inadequately drained. But many areas of normal upland soils are imperfectly drained because of topographic position, texture or subsoil conditions. Crops may do well in dry seasons but in wet years, if not an actual failure, they are often poor and unprofitable. In many cases the soil is slow to warm up in the spring, the crop season is shortened and the yields are much lower than they should be.

"The installation of tile is usually all that is needed to provide for an adequate removal of excess water. Only where the natural drainage system of an area is poor and outlets for the tile cannot be provided are drainage ditches necessary. With the exception of the northwestern central part of the state, in the Wisconsin drift soil area, where the land is level and streams and natural drainage ways are few, there are few areas where it is difficult to find suitable outlets for tile drains. In most cases streams are quite readily accessible to the tile, and by proper installation thoro drainage may be rather readily accomplished.

"The cost of installing tile may be considerable, but the greater value of the crops secured will more than make up for the outlay. It should be emphasized that wherever land is not properly drained, tile should be laid as the first necessary treatment, if large crops are to be secured. Other treatments may then be made with success, but until the area is thoroly drained fertilizing materials will have little or no effect."

APPOINTS BUILDING STANDARDS BOARD

Appointment of a Board of Building Standards recently was announced by Gov. A. V. Donahey, of Ohio. The board, which consists of seven members, will act as a division of the state department of industrial relations, and its work will have a strong bearing on all building and construction operations thruout the State of Ohio. Those appointed to the board are: Herbert B. Briggs, president of the Ohio State Association of Architects; John H. Clemmer, vice-president and general manager of the Clemmer & Johnson Co., Akron, Ohio; William C. Groeninger, Columbus, Ohio, sanitary engineer; Edward J. Cavan, electrician; Peter J. Dempsey; Thomas P. Kearns, chief of the state division of workshops, factories and public buildings, and W. L. Dittoe, chief sanitary engineer of the state department of health.

Sorting and Grading Face Brick

Describing Practices Which Have Been Proven Good by Experience—This Article Is from a Talk Given Before the Ohio Red Division of the American Face Brick Association

Howard F. White

Hocking Valley Products Co., Columbus, Ohio

GENERALLY SPEAKING, there are three kinds of brick: smooth, matt or semi-rough, and the so-called rug or vertical scored. In the main there are also three grades: firsts, seconds and culls. Smooth brick are assorted more closely for shade and grade than the other textures as the imperfections are more pronounced. A smooth brick, whether stiff mud or dry press, has a shiny or glossy appearance and when chipped or marred the textural appearance is changed, which at times causes trouble. Possibly not so much today as in the past, but, a smooth brick is laid in a smaller joint which requires more plant care. It is not necessary in the rougher texture to be so careful because the brick are naturally rough and a slight imperfection on the face is not sufficient to call it an inferior grade. In other words, the textural effect is not materially changed.

What Is First Grade Brick

Now we have arrived at a place of just what is a first grade, or a second grade, or culls. In my opinion, a truly first grade brick should be straight, good texture, and fairly uniform in shade. A second grade is somewhat crooked, faces chipped, corners marred and a wider range of color. Culls are what are left from the first and second grades, which can either be too crooked or not sufficiently burned to withstand weather conditions. There might be considered another grade known as "specials." At times when something goes wrong with the burning resulting in an off shade, we get what would be considered this class of material. These brick would hardly demand a first quality price altho mechanically good, and it is therefore necessary to dispose of them at a reduced price. Then again, a plant is apt to get brick which would be considered something a little better than the second grade or culls. In that case, a higher price can be realized than a regular second grade or cull figure. Probably brick of this character are sold on small jobs and where the dealer or customer visits the plant and becomes acquainted with just what they are, or samples are submitted showing the range of color and quality.

Number of Shades Necessary

On a normally well regulated plant making red brick three or four shades should be all that is necessary. From the top of the kiln the brick are slightly flashed, then come dark red, medium red and light red. However, if every brick were closely sorted there would be more shades, but there is always an allowable, commercial variation. Shades are more numerous in flashed brick than in clear burning and any plant is liable to get a certain amount of so-called off shades. Particularly in a rough texture where there is a good business on mingled shades, these off colors can be worked in to good advantage providing they make a proper blending. In fact the more colors in a mixture the more beautiful the result.

Generally two methods are employed in sorting: one is to wheel from the kiln to tables in the open and the other in the kiln. The latter method is in greater use. After the first few brick are taken off the top a sorter can determine how many deep will go for a certain shade and so on to the bottom of the kiln. This method is also less expensive because it eliminates double handling. Some plants employ men that do nothing but sort, but in our own plant our sorters are wheelers and vice versa. We use no helpers in the kiln and each man has to take care of his own work.

Economical and Efficient Sorting

Back of it all, there are several requisites that make for economical and efficient sorting. You must have good material, it must be properly mixed and tempered, machinery in good repair, sufficient care in hacking, and efficient setting and burning. Take a gang working a kiln that is rolled and stuck and notice their attitude. They are indifferent and lose heart. But, put them in a kiln where the brick are standing nice and straight, well manufactured and a good burn, and they are happy and glad to be working for you.

I appreciate that we cannot, or rather do not, at all times have ideal conditions and have to take bitter with the sweet, but in the process before we come to sorting, skill and care should be exercised. Then, we will get a good percentage of first class ware. Understand that I have not attempted to frame excuses or alibis for kiln workers, but, brick poorly manufactured cannot go thru the different stages and come out a first quality product. The men should be made to realize that the very existence of a plant, which means their bread and butter, depends on proper sorting and if our customers continually kick on service, prestige is lost and the inevitable will follow.

Do More than "Get By"

The term "getting by," sad to say, is possibly too much in vogue. Can we "get by" with this or that on some order? The color may be a little off or the grade not up to a standard and you take a gambler's chance. The car arrives and trouble follows. Then the unpleasantness comes of trying to straighten out the mistake. The brick may be refused and have to be hauled from the job. You have not only lost money, but destroyed your client's faith in you and your goods. When trouble of this kind arises, it is a good plan to have the superintendent, or man in charge of the loading, inspect his service and get first hand information. Let him see the folly of his way of attempting to "get by".

To a certain extent there are two conditions that have an influence on shading and grading: one is law of supply and demand and the other labor. When demand exceeds supply and labor is scarce, the tendency is toward laxity. This is not a choice of the manufacturer, but, it is because of the independent, don't-care attitude of the men, and we, as manufacturers, cannot help ourselves and have to suffer. This gets us in bad repute and gives the industry a black eye. Sorting should be watched very carefully for it means service and service which in the end is promptness and quality is the agency on which we are to strengthen and expand our business. It is the silent advertisement of our industry.

Keeping Track of Repair Parts

How Money, Time, Trouble and Annoyance Can Be Saved by Keeping on Hand an Adequate Stock of Repair Parts

E. E. Ayars

Chairman, Refractories Division, American Ceramic Society

A MAINTENANCE LOG BOOK for recording in detail all repairs made to plant machinery should be found in every brick plant. One system which has proven very satisfactory is kept in a loose leaf binder. The form is printed as shown in Fig. 1, showing in the left hand column the month with an adjacent column for the date. The year may be entered at the top of the date column. At the right hand margin a column is provided for entering costs of machine parts. The balance of the page is lined for entry of repair details. One sheet is used for each machine, the name, number and location of which forms the page heading. The book may be indexed if desired.

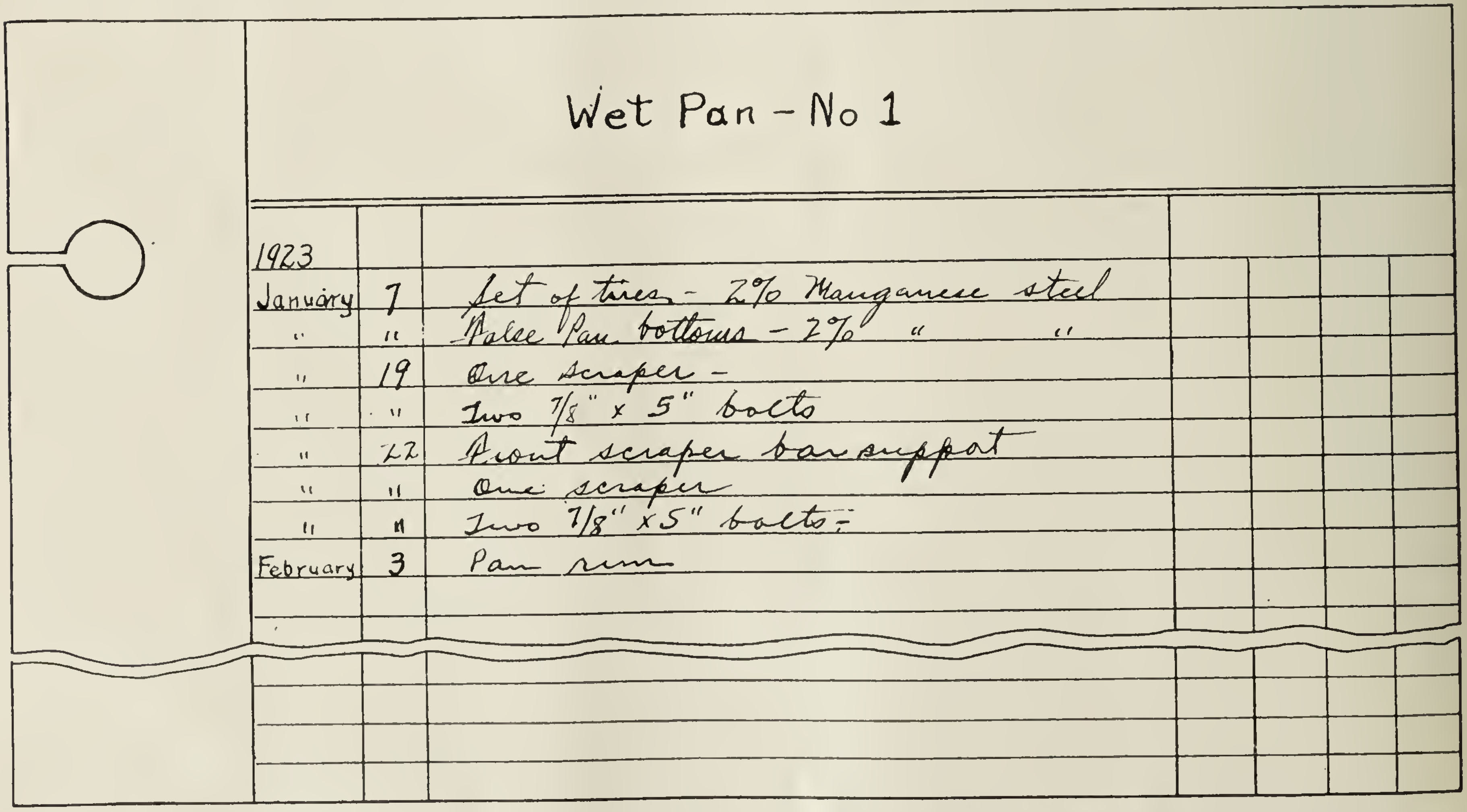
Keep Two Maintenance Log Books

Two books are kept, one being in the hands of the master mechanic and the second one an office record for the use of the superintendent. The master mechanic keeps a daily record of repairs made and parts used. The first of each month the superintendent's file is brought up to date from the master mechanic's record and the cost of repair parts used are entered in the proper column. As far as the cost item is concerned it is rarely used in accounting records, and merely shows the value of replacements. Over a period of one or two years comparison of the value of replacements on two or more machines of the same type and size is interesting. The actual value of the cost column to a superintendent is found in determining the unit cost of repair parts made from different materials, or obtained from different sources. For example, let us take the case of scrapers used on a wet pan. The original equipment includes a supply of cast steel scrapers and they wear out very rapidly. A tougher material is sought and new scrapers of two per cent. manganese steel are obtained at a much higher cost. A record of replacements is kept with each kind of scraper over a period of time and the average life of each determined. The cost per day of service is easily found, and forms the basis for our choice of material. One thing which this record does not account for, however, is labor of making repairs and time lost by machinery being out of service, which also must be considered in the above case.

Can Detect Inferior Equipment

An increase in replacements of certain wearing parts above the average will lead to investigations on the part of the superintendent, who may find that inferior castings have been furnished or that local conditions are not correct, and steps may be taken to remedy the situation. The continuous record eliminates all guess work as to the service of plant machinery and more than justifies the small amount of clerical work necessary.

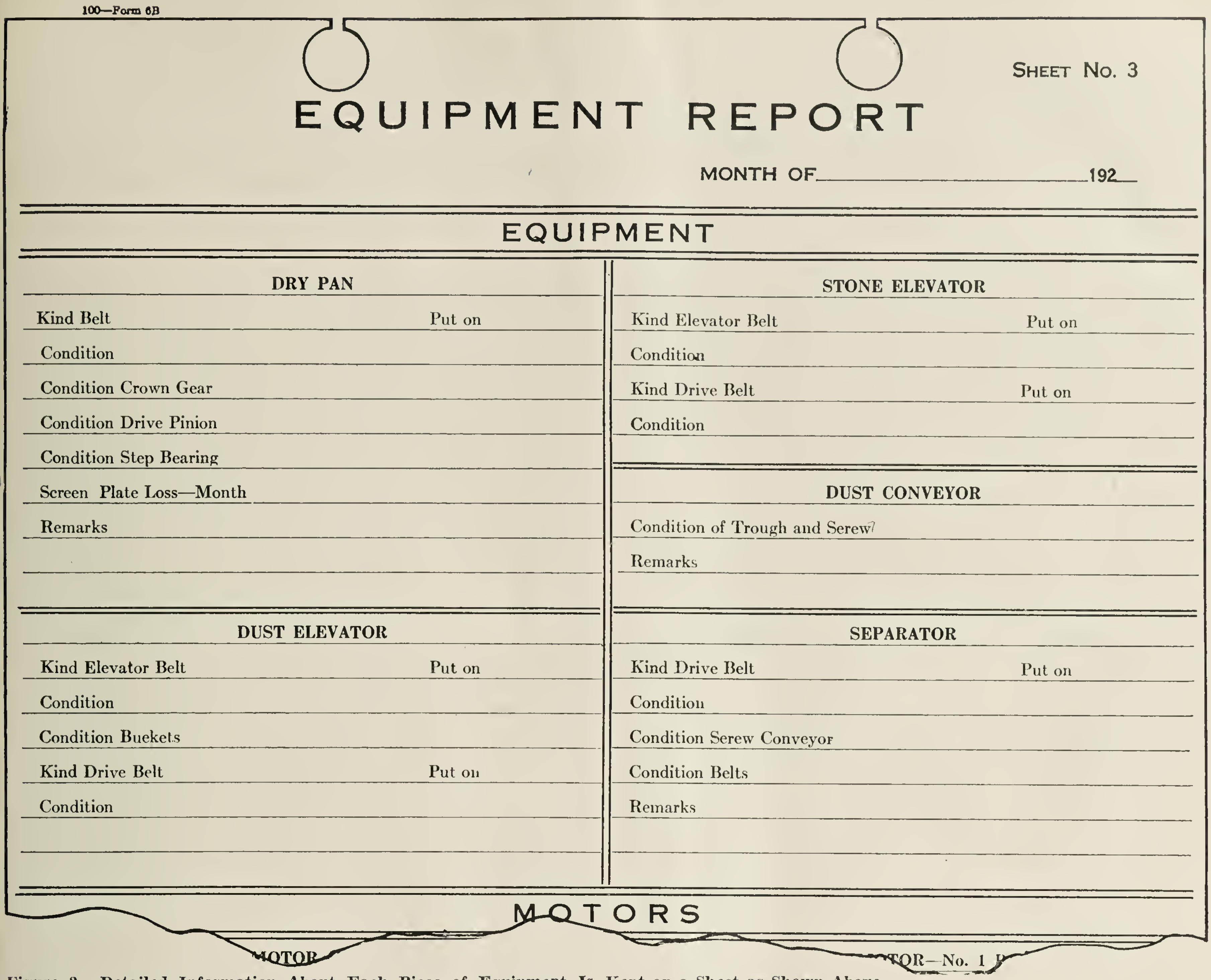
A weekly inspection record assists very materially in the maintenance of machinery. One company uses a printed form (Figure 2), on which detailed information is required for each motor, machine or other piece of equipment on the



Wet Pan - No 1

1923			
January	7	Set of tires - 2% Manganese steel	
"	"	False Pan bottoms - 2% " "	
"	19	One scraper -	
"	"	Two 7/8" x 5" bolts	
"	22	Front scraper bar support	
"	"	One scraper	
"	"	Two 7/8" x 5" bolts -	
February	3	Pan rim	

Fig. 1. Sheet from a Maintenance Log Book Which Is Kept in Loose Leaf Form. All Repairs Made on a Machine are Here Recorded in Detail.



100—Form 6B

SHEET No. 3

EQUIPMENT REPORT

MONTH OF ______________________ 192__

EQUIPMENT

DRY PAN

Kind Belt ____________ Put on ____________

Condition ____________

Condition Crown Gear ____________

Condition Drive Pinion ____________

Condition Step Bearing ____________

Screen Plate Loss—Month ____________

Remarks ____________

DUST ELEVATOR

Kind Elevator Belt ____________ Put on ____________

Condition ____________

Condition Buckets ____________

Kind Drive Belt ____________ Put on ____________

Condition ____________

STONE ELEVATOR

Kind Elevator Belt ____________ Put on ____________

Condition ____________

Kind Drive Belt ____________ Put on ____________

Condition ____________

DUST CONVEYOR

Condition of Trough and Screw ____________

Remarks ____________

SEPARATOR

Kind Drive Belt ____________ Put on ____________

Condition ____________

Condition Screw Conveyor ____________

Condition Belts ____________

Remarks ____________

MOTORS

MOTOR

TOR—No. 1

Figure 2. Detailed Information About Each Piece of Equipment Is Kept on a Sheet as Shown Above.

plant. The form is arranged in two columns and space allotted to each machine, a place being provided under each set of questions for remarks.

Inspect Equipment Weekly

The superintendent and master mechanic take a set of forms at a stated time every week and go over all of the equipment, thoroly noting the condition of the working parts. Record is made of all adjustments and repairs needed. The form is turned over to the master mechanic for reference. Each succeeding week a new set of forms is used and the record of the previous week taken along for comparison, progress with suggested repairs being noted. The form of the previous week is filed while the current record is available for the use of the master mechanic. All accessories such as belts are listed showing the date of application and a continuous service record is always available.

Plants using an inspection record are less liable to experience break-downs and the equipment upkeep is never as costly as on plants where no such record is kept.

Make Sure You Have Repair Parts

Unexpected break-downs mean very little on a plant supplied with the necessary repair parts, but often mean an expensive temporary repair or a shut-down if the parts are not on hand. There is only one sure method of maintaining a stock of repair parts and that is to carry a monthly inventory of such material (Figure 3). This inventory requires careful preparation at the outset to be of real value. The most satisfactory form lists all the parts for each type and size of machine under one heading. Each part is listed with its name and part number, if purchased from the manufacturer, or pattern and blue print numbers, if obtained from a foundry in the rough. The material in the part is named as is also the source of supply. It is customary in normal times to carry 60 or 90 days' supply of parts and at the outset if no records are available this is merely a matter of judgment. In a few months adjustments may be made if necessary by referring to the maintenance record. The number of pieces required for repair of one machine and the number required in stock are shown. One column is reserved for listing the number of pieces of each part actually on hand at inventory time.

Handling the Store House

When the number of pieces on hand falls below the number required for stock, an order for additional pieces is placed and before the stock is exhausted new parts are on hand. Prompt attention should be given to ordering parts indicated the first of each month. Should delivery by the manufacturer take longer than 30 days it is apparent in the second month's inventory and requests for delivery are sent out. The cost of keeping this inventory is small and no plant should attempt to operate without it.

In handling the store house two forms are used which are valuable in working up monthly inventory inasmuch as they furnish a check on the physical count. The first of these forms is the receiving record (Figure 4). All repair parts and supplies received are entered on a slip, a description of the material and quantity received, together with the name of the shipper being noted. The slip is made in duplicate, the original going to the bill clerk for checking invoices. The duplicate is placed in the storekeeper's file.

Stores Requisition Is Valuable

The second form is a stores requisition (Figure 5) for the withdrawal of material, and no repair parts or other supplies are allowed to go out except on such an order signed by a foreman. The use of this order insures the correct amount of the proper material being obtained. It eliminates theft of small supplies as the workmen do not have access to the stores, and as no material goes out without the knowledge of the storekeeper he is able to keep up his stock without frequent checking. Another value of the requisition lies in the fact that foremen are more apt to try to eliminate waste of material when they have to write a requisition for each new supply.

The storehouse itself should be laid out in an orderly manner and shelves and bins provided for all supplies. Certain sections are designated for certain classes of materials. The store room of the average brick plant is never so large as to require a card index of locations. The only instance in which such a system is justified is where a perpetual inventory is kept. The monthly inventory of repair parts is very satisfactory and a perpetual inventory only makes extra work. In the case of small supplies the store forms keep the storekeeper in close touch with his stock and no other records are necessary. A complete inventory of supplies is usually taken twice a year.

Take Complete Inventory Twice a Year

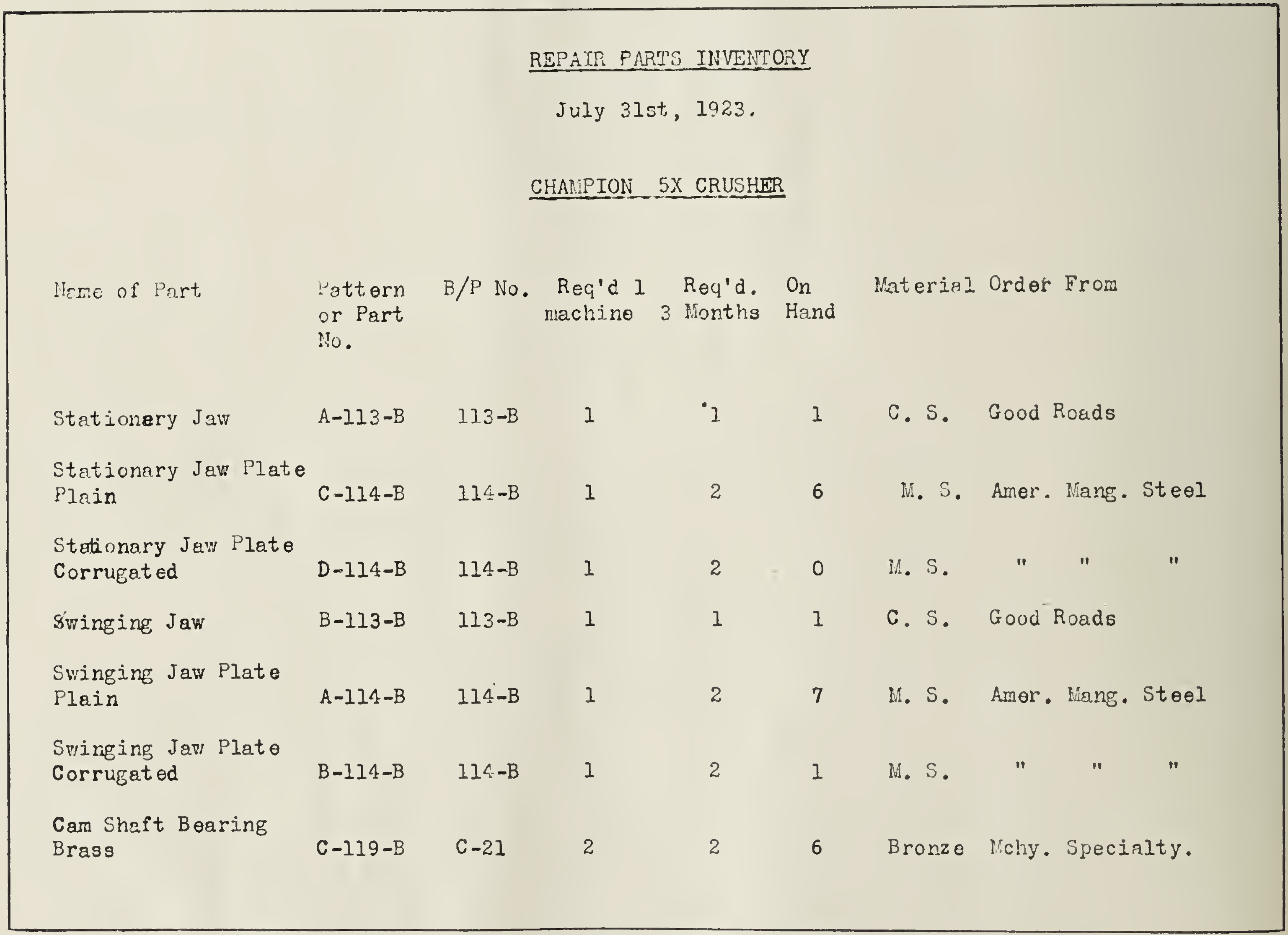
The inventory and store records described are used with a cost system which does not show actual monthly store costs. All materials are charged to costs during the month in which they are received. Twice a year a complete inventory of supplies is taken, and materials on hand credited to the repair accounts.

In some instances a store account is kept and only supplies actually used are charged to repair costs. Such a system imposes a large amount of clerical work and is usually a liability rather than an asset. The simple use of the forms described gives excellent results and the amount of clerical work is almost negligible.

One of the most important records in the superintendent's file is an equipment register. Each motor, machine, elevator, conveyor, and so forth, is listed on a separate page. The entire name plate reading is transcribed and a complete record made of all accessories to the operation, such as bearing numbers, diameter and lengths of shafts; size, material and types of pulleys; length, width, ply and material of belts; width and diameter of gears together with the number and pitch of teeth, sizes of hubs, keys, and so forth. Machine and carpenter shop equipment is included.

Record of Complete Data Valuable

The manufacturer of the machine and each accessory is listed and replacements and repairs may be accurately ordered from the record. Such items as extra motors and other equip-



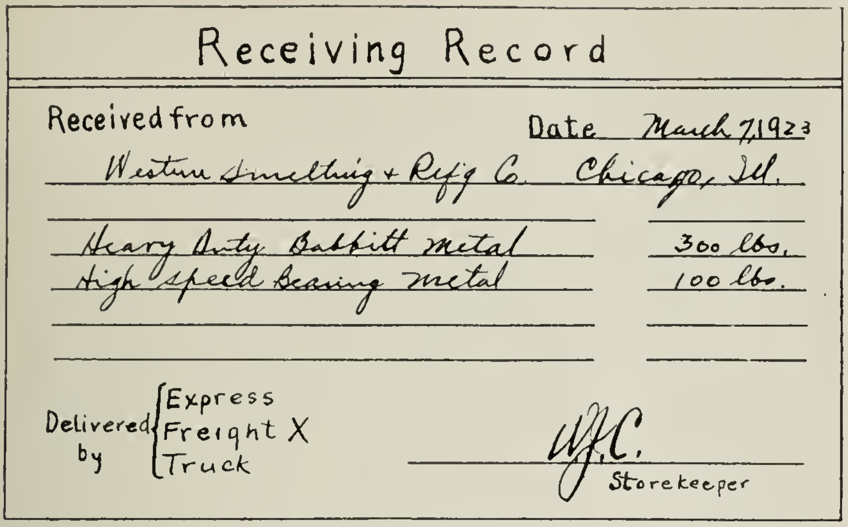
REPAIR PARTS INVENTORY

July 31st, 1923.

CHAMPION 5X CRUSHER

Name of Part	Pattern or Part No.	B/P No.	Req'd 1 machine	Req'd. 3 Months	On Hand	Material	Order From
Stationary Jaw	A-113-B	113-B	1	1	1	C. S.	Good Roads
Stationary Jaw Plate Plain	C-114-B	114-B	1	2	6	M. S.	Amer. Mang. Steel
Stationary Jaw Plate Corrugated	D-114-B	114-B	1	2	0	M. S.	" " "
Swinging Jaw	B-113-B	113-B	1	1	1	C. S.	Good Roads
Swinging Jaw Plate Plain	A-114-B	114-B	1	2	7	M. S.	Amer. Mang. Steel
Swinging Jaw Plate Corrugated	B-114-B	114-B	1	2	1	M. S.	" " "
Cam Shaft Bearing Brass	C-119-B	C-21	2	2	6	Bronze	Mchy. Specialty.

Figure 3. Monthly Inventory Sheet on Which Is Kept a Record of All Parts for Each Type and Size of Machine.



Receiving Record

Received from — Date March 7, 1923

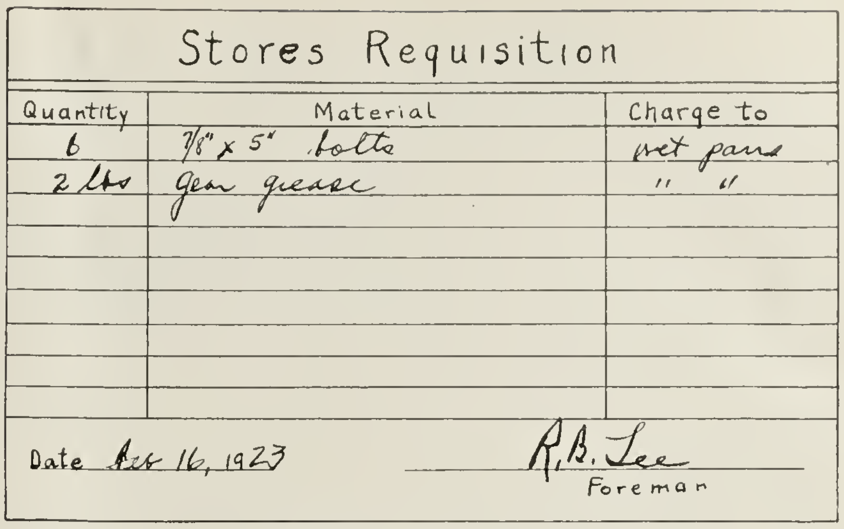
Western Smelting & Ref'g Co. Chicago, Ill.

Heavy Duty Babbitt metal — 300 lbs.
High speed bearing metal — 100 lbs.

Delivered by: Express / Freight X / Truck

W.J.C.
Storekeeper

Figure 4. All Repair Parts and Supplies Received Are Entered on a Receiving Record Sheet as Shown Above.



Stores Requisition

Quantity	Material	Charge to
6	7/8" x 5" bolts	wet pans
2 lbs	gear grease	" "

Date Apr 16, 1923

R. B. Lee
Foreman

Figure 5. This Stores Requisition Is Valuable in That It Prevents Indiscriminate and Wasteful Use of Repair Parts and Small Stores.

ment in storage are listed and their suitability for use in a new installation easily determined by reference to the file.

One copy of this register is kept in the purchasing agent's office, one copy in the superintendent's file and the master mechanic has a third copy. When any changes in equipment are made a revision of the obsolete item is written up in triplicate and filed in the respective registers.

The maintenance of this record eliminates frequent measuring of belts, pulleys and other pieces of equipment when ordering replacements and the superintendent has a complete description of his mechanical layout within reach at all times.

* * *

PUBLISHED WRONG ADDRESS

An item in the August 7 issue of Brick and Clay Record, announcing that the Central of Georgia Railroad had issued a booklet describing results of tests of Georgia clays made at Columbus, Ohio, contained an error. It was stated that copies of this booklet could be obtained by writing to W. A. Winburn, president of the Central of Georgia Railway Co. at Atlanta, Ga. This was an error. Copies of the booklet can be secured by applying to the Central of Georgia Railway Co., Industrial Department, at Savannah, Ga. J. M. Mallory is General Industrial Agent.

* * *

GOOD SOUTHERN GROUP MEETING

A. B. Adams, general manager of the Key-James Brick Co., and chairman of the Southern Group of the American Face Brick Association, reports an unusually interesting meeting of the Southern Group held at Signal Inn on Signal Mountain, near Chattanooga, Tenn., on August 16 and 17. Attendance was larger than any previous division meeting and several applications for membership in the association were received, notably, interests controlled by W. E. Dunwody at Macon, Ga.; Georgia Brick & Tile Co., Adairsville, Ga., owned and operated by B. Mifflin Hood, and the plants of Herty Turpentine Cup Co., at Melville, Tenn.

A visiting program was carried out in which the following plants were visited:

Roofing tile plant of Chemical Clay Products Co.; promenade floor tile plant of B. Mifflin Hood; chemical stoneware and acid ring plant of Pringle Turpentine Cup Co.; drain tile and acid ring plant of the Herty Turpentine Cup Co.; new heavy duty clay products plant of the Herty Turpentine Co., now operating on fireproofing. All of the above plants are located at Melville, Tenn., Hamilton County, about 16 miles north of Chattanooga.

The following day the shale face brick plant of the Key-James Brick Co., the sewer pipe plant and hollow ware plant of Chattanooga Sewer Pipe Works, and the new concrete roofing tile and hollow tile plants of the Dixie Portland Cement Co. were visited.

In regard to future business, optimism was the keynote. Manufacturers present reported a nice volume of business being received; labor conditions easy; fuel and car supply plentiful and "Everything is peaches down in Georgia."

It was decided to hold the next bi-monthly meeting in the city of New Orleans and at that time to carry out extensive advertising and promotion campaign with architects of that city.

* * *

1924 ROAD SHOW JANUARY 14

Plans for the 1924 convention and road show of the American Road Builders' Association have practically all been completed. These two events are to be held simultaneously the week beginning January 14. The convention headquarters are to be in the Congress Hotel, Chicago, Ill. The road show will be held in the Coliseum, as in the past, and the adjoining Greer Building.

* * *

100% MORE ORDERS THAN LAST YEAR

Production at the brick plants in the southeastern field, including Georgia, Alabama, Florida, South Carolina, and parts of Mississippi, Louisiana and Tennessee, now appears to be considerably greater than at this time last year, with unfilled orders on hand probably around 100 per cent. larger than they were during the same period in 1922. The industry also has slightly increased the number of its employes lately, and at present is probably employing about 40 per cent. more workers than at this time last year.

* * *

TO COMPARE PAVING BRICK SIZES

Thru the efforts of the American Society for Testing Materials, George E. Fisk, assistant city engineer of Buffalo, N. Y., has been obtained to make a test as to the value of three-inch brick compared with the four-inch brick for paving purposes. Mr. Fisk will work on this test at the laboratory of the bureau of engineering. He is a graduate of Massachusetts Institute of Technology and holds the office as chairman of the paving brick committee of the Society for Municipal Improvements.

* * *

CORAL RIDGE MAKING BRICK AGAIN

The Coral Ridge Clay Products Co., Louisville, Ky., is having difficulty supplying enough material. After two months' steady running on tile alone, the plant on September 1, switched back to a 50 per cent. brick production, with the other 50 per cent. in tile, after having made up tile to take care of a number of large contracts.

How It Is Done in Germany

This Article Describes the Molding Process and Handling of Green Brick from Machine to Dryer—Methods Are Extremely Interesting

Gustav Benfey

TO CONTINUE my last article which was published in Brick and Clay Record some time ago and following the regular course of the operation of a brick plant, I would now have to say something about the different machines used in Germany to prepare the raw material and to form it. These machines, however, do not differ very much from those used in the United States and they are, therefore, well known to the readers of this paper. So it would be best to omit a detailed description and merely mention them.

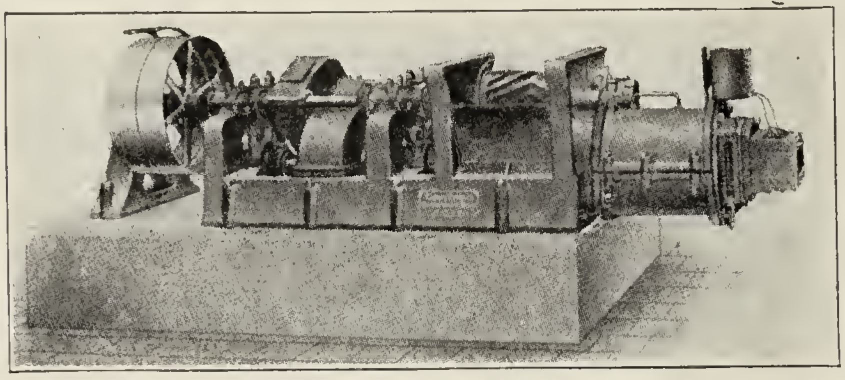


Figure 1. A Common Type of German Brick Machine.

Clay Sometimes Prepared by Hand

In very small plants clay is prepared by means of hand shovels and sometimes the feet of the workmen temper the material. In other plants again the clay is permitted to weather, after which it is well soaked and run thru a pug-mill. From the pug-mill it is sent thru the auger machine and cut in the regular way. In larger plants different types of disintegrators, pug-mills, dry or wet pans are used, but they all, as previously mentioned, differ very little from the American machines. This also holds good of the brick machine except that the mechanism of the interior is somewhat different from its American prototype.

Figure 1 shows a brick machine of the most common type. From this machine the clay column is expressed onto a cutting table and this table differs in every way from the automatic wire cutting process used in America. The automatic cutting machine is designed essentially for a large output, such as is seldom attained in German plants. Therefore, the German cutting table is a hand-operated machine, as shown in Figure 2 and is used almost universally.

Germans Adopting Automatic Machinery

In the last few years, however, this has begun to change; the high wages of the workmen, the absolutely mechanical way of the American, are hastening the adoption of automatic systems. The equipment manufacturers were quick to sense and encourage this demand and in consequence the larger modern brick plants in Germany are more and more being equipped with automatic cutters tho of a very different type from those used in America. It was Keller, Laggenbeck who first adopted such an improvement and followed it with a complete automatic system of transporting the freshly formed brick from the die thru the dryer and into the kiln. Figure 3* shows the first part of this system. This picture shows the clay column coming from the die on the left, passing thru the automatic cutter and the brick being automatically assembled on pallets. The pallets are on a separate belt which moves at a faster rate of speed than the clay column. This provides the necessary space between the brick for drying purposes.

Automatic Handling of Brick

As shown in the figure each pallet carries eight brick. When filled and moved to the end of the table, the pallet stops and is carried at right angles onto an elevator. From there a removable car (Figure 4) receives the loaded pallets and carries them into the drying room, where a slight pressure on a lever at the side of the car suffices to leave the pallets on the brackets which are located on the walls of the dryer. The car thus emptied is then drawn back and ready for another trip. When the brick are dry another car of the same type fetches them from their place, and carries them to a discharger (Figure 5). From there the brick are transferred to a low car which can be turned on its wheels, and adapted to go thru the lowest doors of the kiln and deliver the brick to the setter in the kiln.

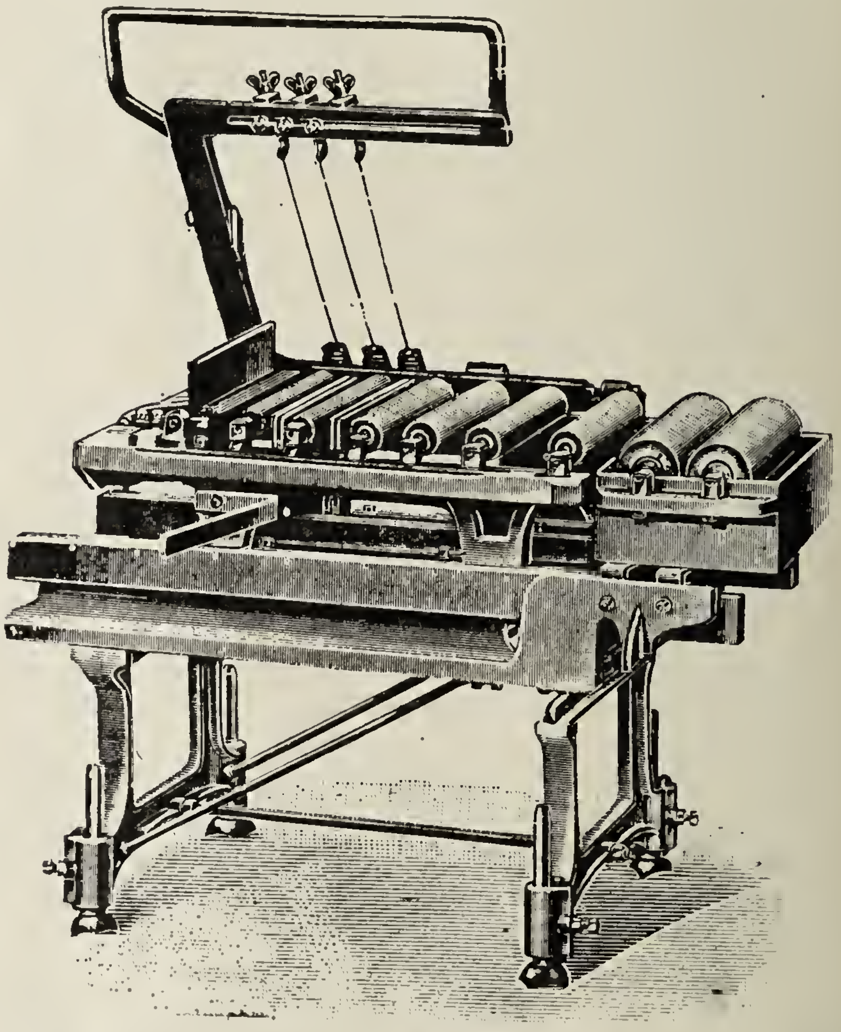


Figure 2. Hand Operated Cutting Table Used Almost Universally.

From the foregoing description it will be seen that this

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*Editor's Note.—This photograph was printed and the equipment described by Alexis Zakharoff in Brick and Clay Record of March 6, 1923.

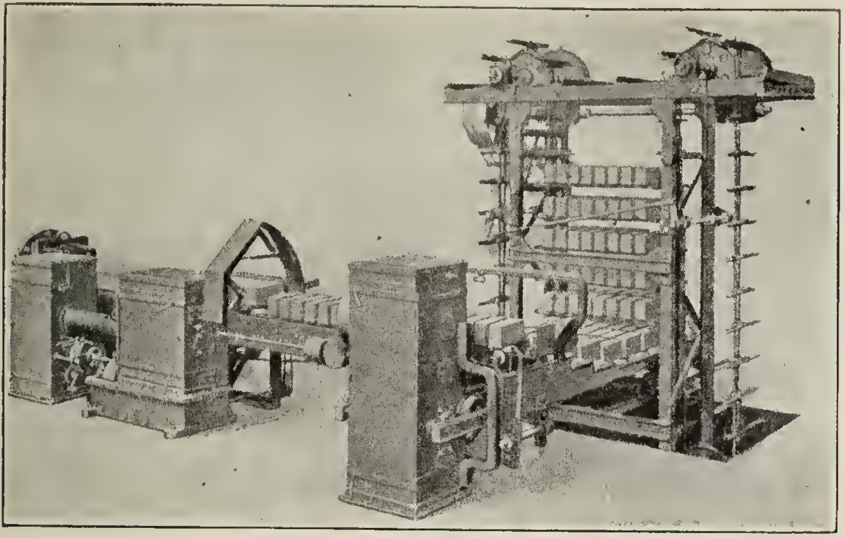


Figure 3. Machine Which Automatically Places Brick from Offbearing Belt Onto Pallets.

method, known as the Keller System, saves much handwork. It is operated by four men and a boy. One man to superintend the whole and place the pallets on the offbearing belt; one man to discharge the brick from the elevator and bring them into the drying room; a third to bring the dry brick to the discharger, and a fourth to set the brick in the kiln. The boy is used to bring the emptied pallets back to the machine. An important advantage of this system is that the green brick on their way from the machine to the kiln are not touched by the none too tender hands of the workmen and therefore arrive in better condition.

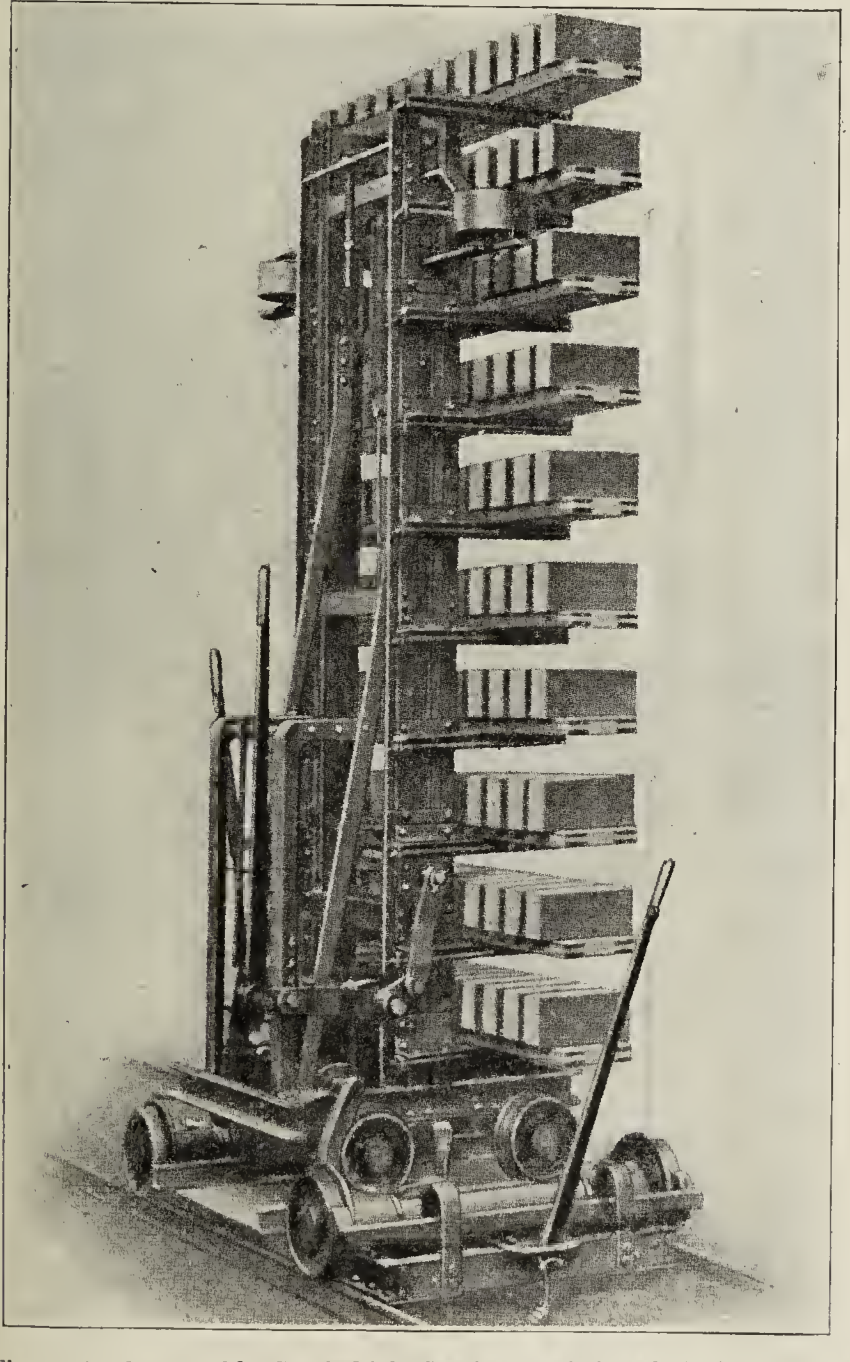


Figure 4. Removable Car Which Carries Loaded Pallets into Drying Room.

DANISH BRICK INDUSTRY, 1922

The Statistical Department has just made public production figures covering the Danish brick industry during 1922. The report covers 270 brickyards, or practically all in the country, and states that:

During the busy season the yards employed 6,000 workers, of which about 300 were women. During the year 353,000,000 brick were produced, as against 212,000,000 during 1921 and 275,000,000 during 1920. During 1922, 15,000,000 roof tiles were produced, as against 11,000,000 during 1921. Only 10,500,000 drain tile were produced, however, as compared with 26,500,000 during the previous year. The total value of the production of the brickyards was 22,600,000 kronen.

As regards sales it is stated that the stocks of brick as of January 1, 1922, were 113,000,000. The production during the year was 353,000,000 and sales totaled 348,500,000. With breakage, and so forth, estimated at 11,000,000 brick, it is calculated that the stocks as of December 31, 1922, amounted to about 106,000,000 brick.

During 1922 the brickyards have used 65,000 tons of foreign fuel, of which 17,000 tons were peat and about 1,600 tons lignite.

* * *

276 PUPILS IN DETROIT SCHOOL

The Bricklayers' School which started in Detroit, Mich., last January, has enrolled since then 276 pupils, it is reported by Ralph A. MacMillan, secretary of the General Builders' Association of Detroit. 50 men have been graduated after a full six months' course and these men are now working as masons.

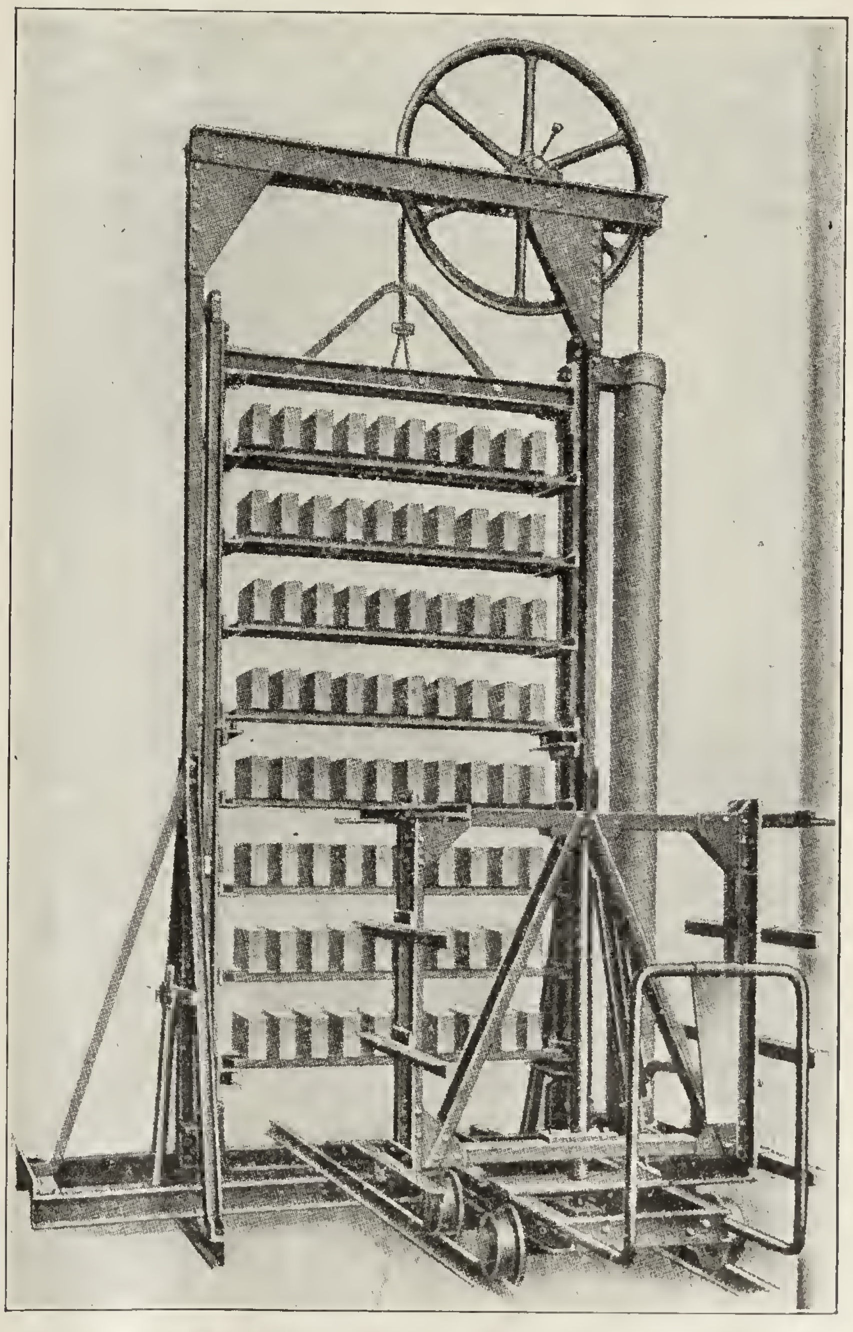


Figure 5. Discharging Device Which Transfers Dry Brick from Pallets to Car Preparatory to Being Set in Kiln.

Apprentices and Craftmanship

Address of William J. Haggerty

Business Representatives of the Bricklayers' Union of Philadelphia, and Representative of the Council of Associated Building Trades

Editor's Note—This address was delivered at the annual convention of the American Institute of Architects, in Washington, D. C., May 7, 1920, after the work being done in Philadelphia by D. Knickerbacker Boyd and the bricklayers, as described in a recent issue of Brick and Clay Record, was referred to on the floor of the convention by Wm. B. Ittner, a member of the Board of Directors of the Institute.

"IT IS TRUE that, for a considerable number of years, we have been afraid of the architect. We have always seemed to think that he was something far above us, and could not be reached; but, after attending your convention for two or three days, and holding the little social intercourse that I have had with you, I have come to feel that you are just as democratic as the man is who meets his fellows in his little labor union, trying to solve some of their little problems.

Bricklayers Can't Read Plans

"Mr. Boyd, a member of your Institute, who has been very active in the city of Philadelphia in his efforts to bring about a better understanding between all those connected with building and to present the subject in a better light to the labor unions and to the public, has done such a wonderful amount of good that it is spreading over all the city of Philadelphia. We asked him for his assistance and cooperation in trying to educate our members to a higher standard.

"We found, after an investigation, that 90 per cent. of the bricklayers who belonged to the union—and there are approximately 2,000 in Philadelphia—did not know how to read a plan, did not know one symbol from another, nor what they meant, and we immediately started a class to educate our men. I think we gave Mr. Boyd's partner, Mr. Abel, more work than he thought he was really going to have, because we finished up with a class of 200.

Starts Educational Campaign

"After I found out what good had been done by Mr. Boyd, and by the other architects and the other speakers whom Mr. Boyd has had at our meetings every Monday night, I immediately started a campaign of education in the labor unions myself. We now give our building out to four different unions who are teaching their members how to read plans and how to construct work more properly without being directed by one man having charge over a considerable force which he can not handle. Our aim and object, if I may say so, is to have every bricklayer and, if possible, every building trades craftsman in the city of Philadelphia, as good an architect as we can make him.

Education Makes Foremen of Workmen

"This is a little experience which I may tell you about. We were always under the impression that our employers and the architects thought that the more illiterate a workingman is, the better workingman he is; but after taking two or three boys under my guidance and educating them myself, sending them to school and watching over them, I find that they are three of the best 'men' in the city of Philadelphia today. They are only 24, 25 and 26 years of age, and they are now superintendents for contractors, which goes to prove that the more opportunities a workingman has of being educated, the greater productive factor he is, and the cleaner and better citizen of the United States.

"We have come to the conclusion that the only logical and sane course to pursue to kill radicalism, socialism and bolshevism is to educate the workingman.

Architect Should Lead Crafts

"I feel sure, as some of my colleagues do, that if the American Institute of Architects would take its proper place and be the guiding hand of all the building craftsmen concerned with the completion of any buildings, from the common laborer up; that if the architect would take his place as the leader, which he really is, instead of apparently standing aloof and having every one looking up to him, as we see it, greater results could be obtained, because without a guiding hand we really do not amount to anything. If we do not have a guiding hand—some one to teach us and lead us along—we naturally drift into a powerful organization that does not understand the rest of our fellowmen and runs right over them. We have no desire to do that. We want to learn, and we want educated, intelligent men to be our leaders, whether they belong to our respective organizations or not.

Jurisdictional Strikes Could Be Minimized

"You can readily see that the representation of the Institute upon the Jurisdictional Board of Awards can do a wonderful amount of good in the building world. But you can not at this time conceive what an amount of good it has done. You all know that from 50 to 60 per cent. of strikes are caused by jurisdictional disputes; and if we have some one to say: 'You can not do this,' as this jurisdictional board has already done, the amount of trouble in the building world is minimized.

"Mr. Boyd, I may say, now has the absolute confidence of sixty thousand building-tradesmen in the city of Philadelphia. He can do more, I believe, than any other man that does not belong to organized labor. He can go into their meetings and sit down and listen to their discussions. He is invited, and they are looking to him and to the local chapter to be the one guiding hand in the city of Philadelphia to teach and educate the workmen, and it is something they certainly do need."

* * *

OMAHA TO START BRICKLAYER SCHOOL

Brick masons will be trained in the Omaha, Neb., public school system within the very near future, if the recommendations of the members of the Omaha Builders' Exchange, consisting of all the building material men of the city, are carried out, according to E. H. Brown, secretary of the exchange. Not only will instruction be given in this particular craft, but all of the other building crafts as well.

* * *

FILES BANKRUPTCY PETITION

Ben J. Skinner and John A. Skinner, doing business at Shoshoni, Wyo. as the Skinner & Skinner Brick Co., have filed a voluntary petition in bankruptcy at the United States district court, in Cheyenne, Wyo., it is reported. Liabilities are said to be $9,077.74, and assets, $5,815.

FINE CERAMIC MANUFACTURE

A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

POTTERY INDUSTRY IN FINE SHAPE

Generalware potteries thruout the United States have settled down, following the summer holiday season, for a steady run thruout the balance of the year and into the first quarter of 1924. For, be it known that quite a number of generalware plants have a good deal of January-February-March business now on file.

There will be quite an increase in the production of generalware in the United States during the new year, the excess over the current volume representing between 20 and 30 kilns.

Included in the additional kiln construction record will be the new tunnel kiln plant of the Homer Laughlin China Co., at Newell, W. Va., and the new five kiln plant of the W. S. George Co., at East Palestine, Ohio. Two additional kilns have been ordered by the Southern Potteries Co., at Erwin, Tenn., and additional kilns have been contracted for at Sebring, Ohio.

While this increase in kilns is going forward, it must not be overlooked that an increase in the output of decorated ware will follow, as many firms have arranged to erect additional decorating kilns.

Plants manufacturing hotel china are also arranging to increase output. The Jackson China Co., at Falls Creek, Pa., is adding several kilns, likewise the Shenango China Co., at New Castle, Pa. The Syracuse China Co., at Syracuse, N. Y., has started operations in its new addition, and additional kilns are to be added to this unit.

Department store buyers and the jobbing trade, knowing full well that the pottery market is firm, and that selling prices are being maintained by all, are willing to buy futures, knowing that prices will be the same at time of delivery as they now are. It is just this situation that has a lot to do with the activity in the market today—its stability. Both manufacturers and employes share alike in this condition of trade, which at present is one of the happiest that has prevailed in years.

* * *

STATE GIVES GEORGIA SCHOOL $10,000

The Georgia State Legislature, at its annual session held recently in Atlanta, appropriated the sum of $10,000 for the establishment and maintenance of the School of Ceramic Engineering at the Georgia School of Technology in Atlanta, of which mention has been previously made in Brick and Clay Record. The Atlanta Chamber of Commerce also has donated $250 to the enterprise, and the committee in charge, which is headed by B. Mifflin Hood, of Atlanta, has a promise of additional support from other Chambers of Commerce in the state. With the money and the materials that have previously been donated by the clay products and brick manufacturing industries of Georgia the school now has nearly all that it requires, and definite announcement of plans for its establishment will probably be made by the committee at an early date.

* * *

FORM CHINA COMPANY IN CANTON

Capitalized at $2,000, the Bahl-Shem China Co., Canton, Ohio, recently was incorporated by John I. Bahl, William F. Shem, F. A. Hoiles, Alice Hoiles, and E. F. Shem. The company will engage in pottery manufacturing.

* * *

CHILLICOTHE MOSAIC PLANT TO OPEN

Chillicothe's (Ohio) new industry, the manufacture of tile, will be under way by September 1, according to statements made recently by officials of the Buckeye Tile Co. Those in charge of the new concern are J. E. Hysell, general manager, and C. C. Carter, superintendent. Mr. Hysell has had extensive experience in the East Liverpool and Wheeling clay districts, while Mr. Carter has spent 18 years in the tile business.

"Our products will be ceramic mosaics," Hysell stated. "Within four or five months after we begin production, we will employ from 125 to 150 workers. All colors of tile will be made, five different kinds of clay being used. One variety of this clay will be imported from England."

* * *

ALLIANCE POTTERY REORGANIZED

With the election of an entirely new group of officers the reorganization of the Alliance (Ohio) Pottery Co. has just been completed. F. A. Hoiles has been named president; E. S. McKee, vice-president; A. S. Weaver, secretary; Clyde B. Cassaday, general manager. The latter has already assumed active management of the plant.

* * *

OAKWOOD POTTERY FORMED

The Oakwood Pottery Co., of Roseville, Ohio, has been incorporated with a capital stock of $15,000, it is said. As incorporators are mentioned E. A. Baldoser, T. B. Mahone, H. D. Myers, Charles Homman and Mrs. Homer Horn.

* * *

VAN POTTERY TO BUILD

The Van Pottery Co. of Trenton, N. J., will begin immediately the erection of a 2½ story brick building. The structure is to cost approximately $12,000 and will house a pottery plant.

* * *

PADEN CITY TO BUILD NEW KILNS

New kilns for the manufacture of dinnerware will be built by the Paden City (Pa.) Pottery Co., it is said. With the installation of these kilns the brown line of cooking ware, which has formerly been made at this plant, will be discontinued. The plant will be remodeled and enlarged in other respects. It is estimated that the remodeling work will be completed about September 15, and that a total of 125 men will be employed at the new plant. This is an addition of 50 men over the old corps. Charles U. Harris, former manager of the company and recently of New Brighton, Pa., has been appointed manager. E. C. McElhose has been appointed assistant manager.

* * *

POTTERY BUSINESS INCREASING

With the summer season drawing to a close, and the autumn approaching, there has been a decided increase in inquiries for dinnerware for fall and holiday delivery. Buyers of dinner sets and open stock patterns are now realizing that unless specifications are placed with manufacturers in quick time, deliveries for the current year cannot be guaranteed.

It is no secret that quite a bit of business has been received by the dinnerware manufacturers for first quarter delivery in 1924. Some of this business was placed as early as three months ago. This shows that both department stores and jobbing interests are anticipating a firm demand for American ware, and also a heavy holiday sale. Protection of stocks after the holiday rush has already been anticipated by some of the larger interests.

There is not an idle generalware kiln in the eastern Ohio or western Pennsylvania district. Those in West Virginia, Indiana and York state are also being worked to capacity.

Vitreous china plants are just as active in production as the semi-vitreous plants, only the output is marketed thru different channels. However, output of all plants is being absorbed.

One thing more than anything else has had a tendency to absorb this production, and this is the firmness of the market. It is quite different from that found in other industries, inasmuch as the dinnerware and china market is selling on about the same list as immediately following the settlement of the strike in this trade December last.

Buyers show no fear in anticipating future requirements, for when these specifications are written, they are safe in the thought that the current market will prevail at the time of shipment—even if it is three months hence.

* * *

NEW POTTERY AT TUSCALOOSA, ALA.

F. S. Lavender, of Tuscaloosa, Ala., is planning the establishment at Pensacola of a plant for the manufacture of pottery. Mr. Lavender permanently located at Pensacola after an investigation of conditions there the latter part of August, and is now organizing the company for the establishment of the proposed pottery plant.

* * *

WANTS TO BUILD PLANT IN POMONA

The Southern California Tile Co. is seeking a site in Pomona, Cal., on which to erect a new tile factory. The company manufactures a glazed tile flooring.

* * *

ILLNESS CAUSES J. C. PAUL'S DEATH

John C. Paul, aged 45 years, for many years connected with the West End Pottery Co., at East Liverpool, Ohio, and in more recent years sales manager for that company, is dead following an illness of three weeks. His successor at the plant has not been named.

* * *

TUNNEL MAY PROVIDE MORE MEN

Great interest is being taken by the ceramic plants in the Perth Amboy, N. J., district in the proposed construction of a bridge or tunnel between Perth Amboy and Tottenville, Staten Island. Workers in the brick and terra cotta plants experience great difficulty in finding suitable housing accommodations which need would be readily supplied by rapid transit to Staten Island where a large number of modest-priced homes is available.

* * *

MILLER ADDING TO POTTERY PLANT

Monroe Miller of Birmingham, Ala., has let the contract for the erection of an addition to his pottery plant to T. F. Deese.

* * *

ORGANIZE NEW CERAMICS COMPANY

Clay specialties will be manufactured in a plant to be established by the Progressive Ceramics Mfg. Co., Hazlett Avenue, Warwood, W. Va. The company recently was organized by Alec Wishnew and Harry Kalin.

* * *

BARKER POTTERY CO. INCORPORATES

The Barker Pottery Co., Ltd., Toronto, Ont., has been incorporated with a capital of $250,000, by A. E. Barker and others.

* * *

TO START NEW POTTERY

The New Jersey China Decorating Co., Trenton, N. J., has been chartered under state laws with a capital of 2,500 shares of stock, no par value, to operate a local pottery. The company is headed by Harry Rosenberg and Samuel Sherman. It is represented by Forman & Levy, 817 Broad Street Bank Building, Trenton.

* * *

NEW ELECTRICAL PORCELAIN PLANT

The United States Electrical Porcelain Co., Trenton, N. J., has been organized under state laws with a capital of $100,000 to operate a local plant for the manufacture of a line of electrical porcelain products. The new company is headed by John Janusz, Ignacz and M. A. Wisnieski, with registered office at 504 North Clinton Avenue, Trenton.

* * *

KNOWLES POTTERY REORGANIZING

Officers of the Homer Knowles Pottery Co. in Santa Clara, Cal., have filed a petition in bankruptcy. M. R. Dennison of Oakland has been appointed receiver. Irving Pomeroy, president, explains that it is merely a legal expedient to facilitate reorganization following certain financial difficulties which had arisen. The assets, he states, are three times the liabilities. The demand for their product is better than ever before, and market conditions are excellent. As the present capitalization, however, is not sufficient to meet trade demands, new capital is being taken in. Most of this comes from San Francisco and Oakland, tho the parties are not revealed. Meanwhile, the plant is operating at full capacity, and the president declares there is no cause for anything but optimism.

* * *

TIFFIN POTTERIES TO LEAVE CITY

From a recent report the union potters of Tiffin, Ohio, who have been on strike since early last fall, declare they will not go back to their old jobs but will leave the city to seek work elsewhere. The strikers claim that the Standard Sanitary Manufacturing Co., at which place they were employed, failed to recognize union labor and that the factory will be operated as an open shop.

* * *

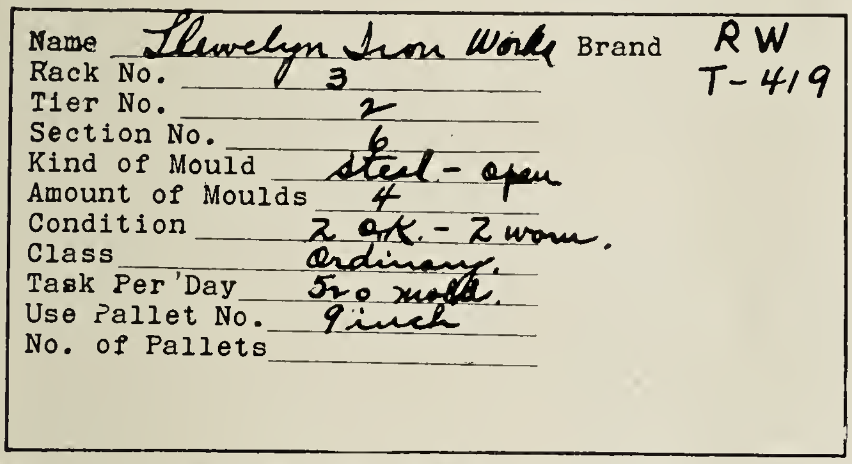
BUILDING CONTINUOUS KILN

According to a report the Acme Pottery Co. at Crooksville, Ohio, is completing a large continuous kiln at a cost of approximately $100,000.

Management and Superintendence

SYSTEMATIC MOLD STORAGE

Refractories plants and others making a variety of special shapes find a problem in mold storage. Often the number of molds runs into the hundreds, many of which are used only occasionally. Plants have been known to store molds in large rooms or even in the open, piling them up in such a manner as to make it almost impossible to find a mold required for use. When handled in this fashion they deteriorate rapidly when not in use and often parts are lost which must be replaced before the mold may be run.



Name Llewelyn Iron Works Brand RW T-419
Rack No. 3
Tier No. 2
Section No. 6
Kind of Mould steel - open
Amount of Moulds 4
Condition 2 O.K. - 2 worn.
Class Ordinary.
Task Per Day 500 molds.
Use Pallet No. 9 inch
No. of Pallets

Method of Cataloging Molds Which are Stored According to a Definite System. Information Kept in Card Index.

A system of storage which involves cataloging all molds and special pallets is desirable and saves time and money.

The mold storage should consist of racks which are divided into sections. Each rack is identified by a number as are also the sections and tiers. The racks should be built in some section of the plant handy to both the hot floor and the mold shop. Molds should not be stored over the dryer or hot floor, as wooden molds warp and crack and steel molds rust easily under such conditions. Special pallets are usually made of light kiln dried lumber and covered with tin. A construction intended to reduce warpage in service is used, and pallets may be stored over the dryer or hot floor without damage. Molds are usually branded with a mark or number specified by the customer and in addition the manufacturer's blue print number is used to make identification complete. It often happens that two or more customers will have special shapes of the same number or brand and the blue print number eliminates error in choosing the mold. The position of all molds in the rack is marked with the brand to facilitate removal for use and return to the proper place for storage. The mark is stenciled on the edge of the shelf.

Special pallets carry the same identification as the mold with which they are used. Occasionally one pallet will serve for two or more molds of similar design and carries brands of all such molds.

The mold catalog is kept in a card index file, a regular form being used. The customer's name appears on the index tab and is the first entry on the card illustrated. The brand and blue print number are placed at the upper right hand corner to facilitate finding the card in the file. The position of the mold is noted as being in section 6, tier 2, of rack number 3. The kind of mold refers both to the material used in its manufacture and the type of construction.

The number of molds on hand and their condition is noted. If a mold is damaged in service it is repaired before being returned to storage. When it becomes badly worn it is repaired if possible or discarded.

The word "class" applies to molding class of the brick which is determined by the nine-inch equivalent. The common designations of class are Standard, Ordinary, Difficult and Coke Oven. Molding rates are figured on nine-inch equivalent and the number of molds required for a day's task is shown.

A notation of the pallet to be used and the number available together with their location in the pallet rack completes the record.

This system is very satisfactory and the catalog easily kept up by the hot floor man whose duty it is to put molds into service. The expense of erecting racks is justified by the time saved in finding molds and there is no loss of parts.

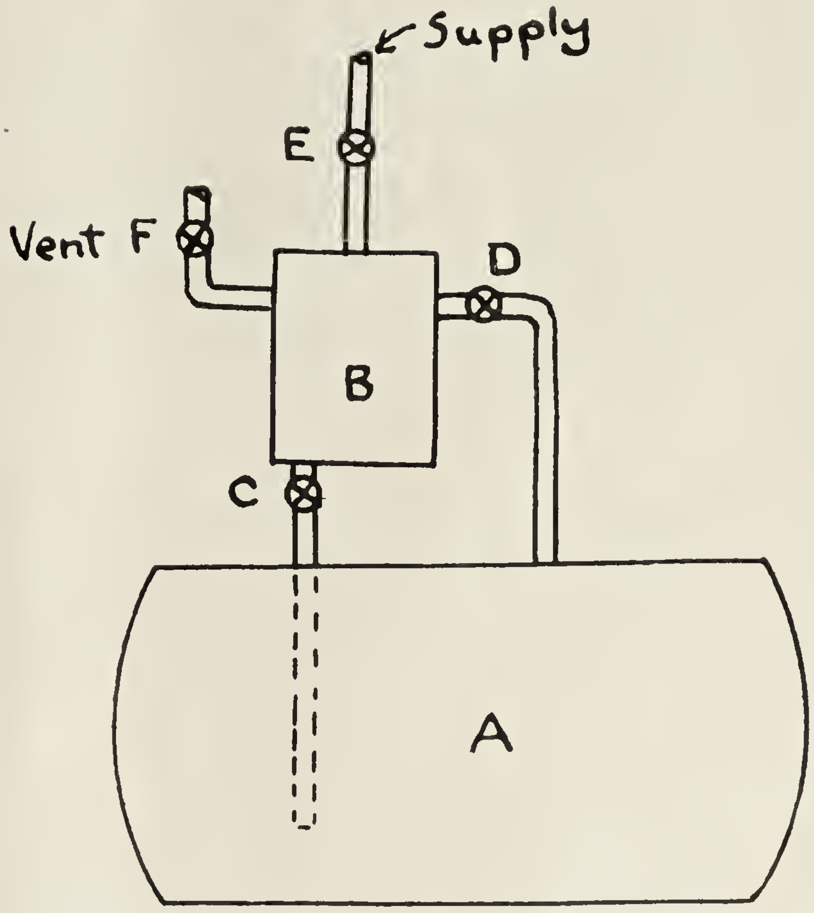
⁂

FEEDING A BOILER UNDER PRESSURE

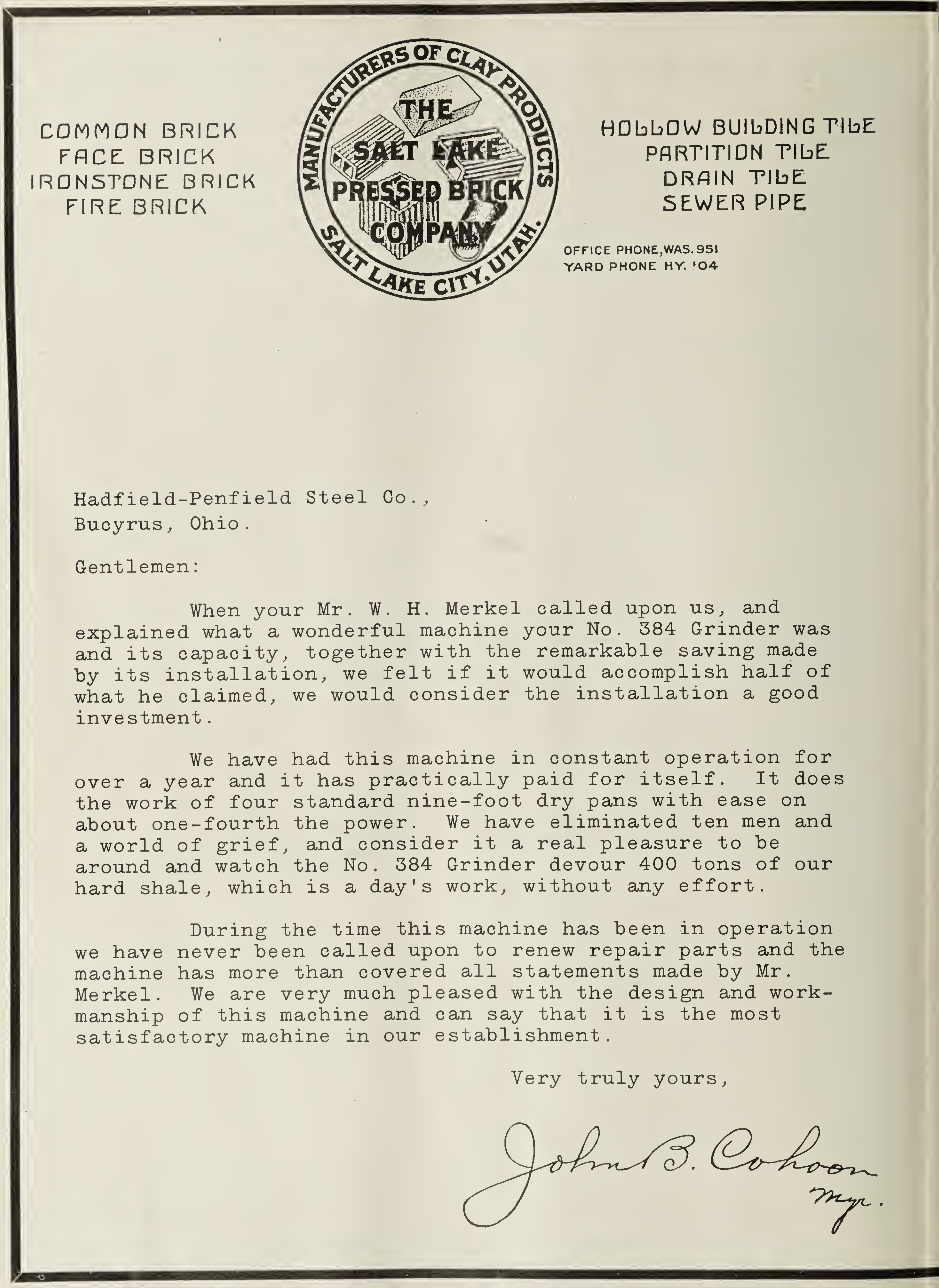
The illustration herewith shows how water can be fed into a boiler under pressure without the use of an injector or pump of any kind. The scheme could be used on clay plants that have facilities for getting their feed water over the boiler without extra power.

"A" is the boiler that is to be fed with water. "B" is a tank or vessel capable of withstanding as high steam pressure as the boiler itself.

Close valves "C" and "D" and open valve "E" and vent "F" so that tank "B" will fill with water thru the supply pipe. Then close valves "E" and "F" and open valves "C" and "D." Steam will enter "B" thru the valve "D" and the water from "B" will flow downward thru "C" due to gravity because the vessel "B" is now nothing more or less than a part of "A" and since water naturally seeks its level in pres-



Method of Feeding Boiler Under Pressure Without Injector or Pump.



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Gentlemen:

When your Mr. W. H. Merkel called upon us, and explained what a wonderful machine your No. 384 Grinder was and its capacity, together with the remarkable saving made by its installation, we felt if it would accomplish half of what he claimed, we would consider the installation a good investment.

We have had this machine in constant operation for over a year and it has practically paid for itself. It does the work of four standard nine-foot dry pans with ease on about one-fourth the power. We have eliminated ten men and a world of grief, and consider it a real pleasure to be around and watch the No. 384 Grinder devour 400 tons of our hard shale, which is a day's work, without any effort.

During the time this machine has been in operation we have never been called upon to renew repair parts and the machine has more than covered all statements made by Mr. Merkel. We are very much pleased with the design and workmanship of this machine and can say that it is the most satisfactory machine in our establishment.

Very truly yours,

John B. Cohoon
Mgr.

AMERICAN No. 384 GRINDER

Grinder Efficiency is a Combination of Correct Design and Correct Construction

In The American No. 384 Grinder we have that Combination.

The American No. 384 Grinder is Doing the work of three to six nine-foot pans.

Consider the Capacity — Cost Saving — Quality of Output.

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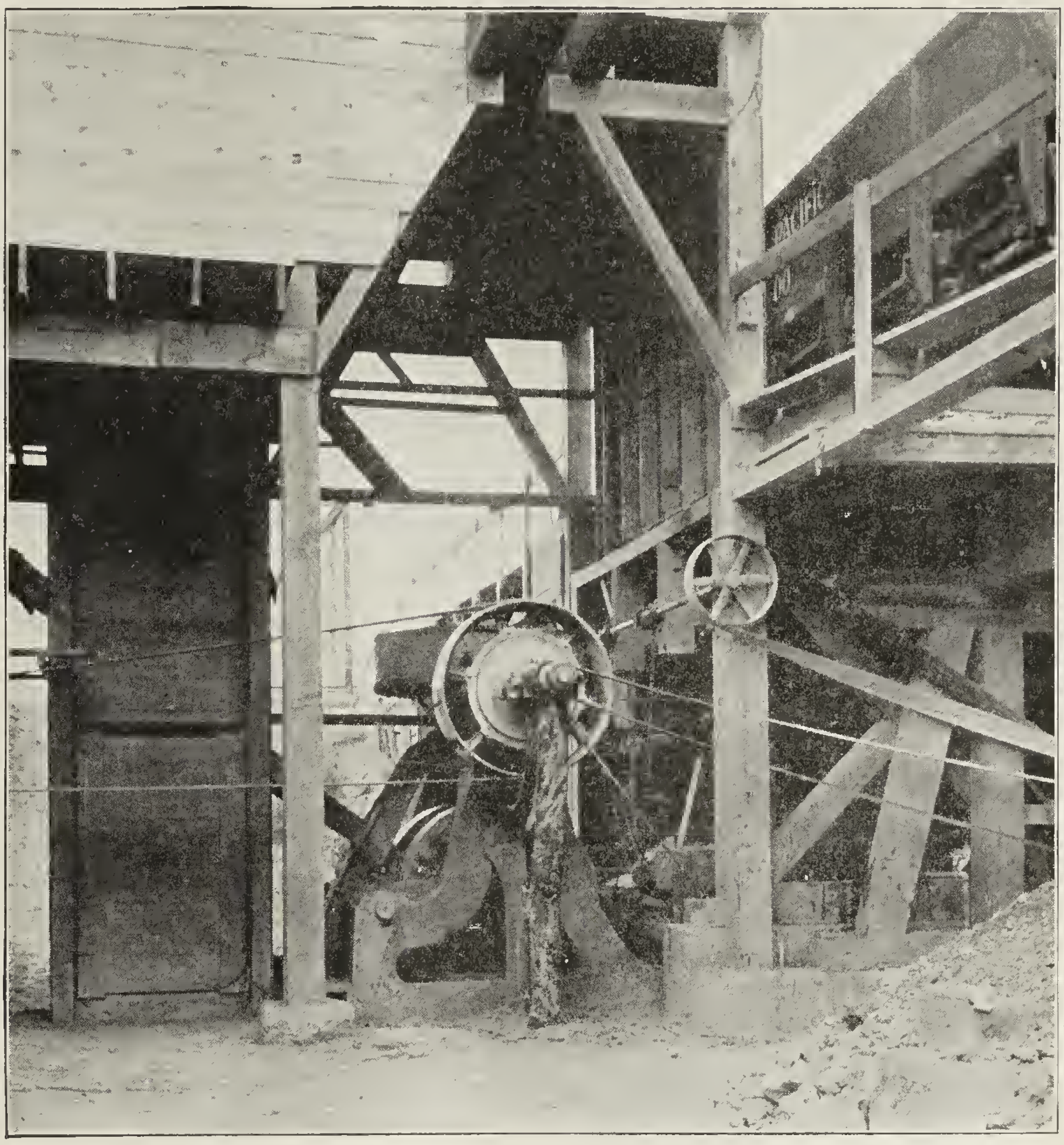

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HEAT lost through walls and settings of uninsulated kilns increases production costs

1—by causing an excessive consumption of fuel;
2—by making it difficult to get high temperatures and hold them evenly;
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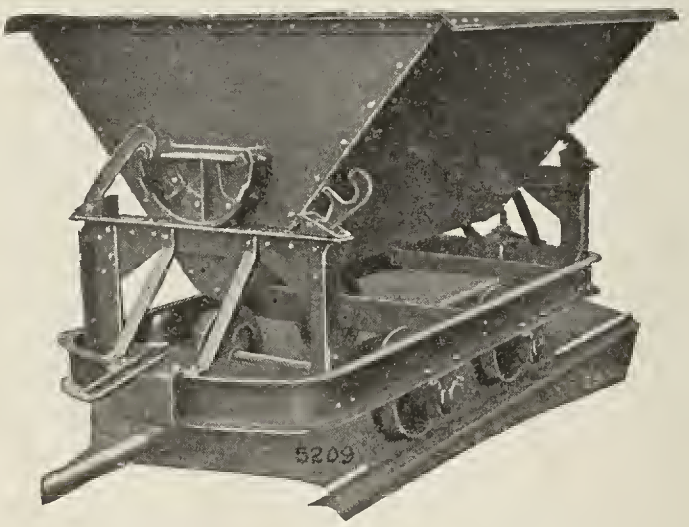

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FOR EVERY INDUSTRIAL PURPOSE

sure vessels as well as in the open atmosphere it will flow downward, "B" will empty and the water level in "A" will be raised. After "B" is empty close "C" and "D" again and open "E" and "F" and repeat the above process.

The writer is informed that a boiler feeding device of this kind is now on the market and that it is proving to be a success on large as well as small boilers. Its simplicity should certainly attract attention.

It is well to note in this connection, however, that SOME steam is required to do this work. When all of the water is emptied out of "B" that vessel is full of steam, hence the volume of steam used is equal to the volume of water fed into the boiler. It is therefore a simple matter to compute the amount of steam required to feed a given quantity of water into a boiler with this apparatus.—W. F. Schaphorst, M. E.

⁂

AUGER MACHINES AND DIES

(References at end freely quoted from.)

Editor's Note—The facts published under this title are a part of a paper on the subject of dies and auger machines made public by the Pacific Northwest Clayworker's Association following a meeting at which that topic was discussed. The rest of this paper will be published in the Management and Superintendence Department of Brick and Clay Record in future issues.

PLASTIC CLAY suitable for auger machine work is composed of three parts: (1) The cementitous, lubricating colloidal clay portion which provides the plastic strength and shrinks with drying or loss of water: (2) The non-plastic non-lubricating portion, consisting of sand or shale grains, and so forth, necessary to dilute or "open up" the plastic portion and to prevent excessive shrinkage, warping and cracking, and (3) The water films which are adsorbed onto the surfaces of all particles and which assist in binding them into a yielding, moldable mass with sufficient strength to hold its own weight after shaping.

The greater the colloidal content, the more plastic or "fatter" is the clay; the greater the sand or non-plastic content the less plastic or "leaner" will be the clay; the greater the water content, the less pressure is required for molding or the greater the fluidity of the mass.

Action of Pressure

When pressure is applied to a true liquid in an enclosed vessel, it is transmitted equally in all directions; when applied to a mass of plastic clay it is transmitted in all directions but unequally, the greater pressure being felt in the direction of the applied force; when applied to a solid, it is transmitted without loss in the same direction thru the solid.

As the water content of a clay mass is decreased, the transmission of pressure changes from that of an imperfect liquid to that of a solid.

When pressure is applied to plastic clay free to move, some of the plastic material will be squeezed out from between the non-plastic grains in the direction of the pressure and will collect between the grains in directions perpendicular to the pressure. Consequently the shrinkage will be greater in directions perpendicular to the pressure than in directions parallel to it. (See: James Bailey, "Variation in Linear Shrinkage of Clay Test Pieces," Trans. Amer. Cer. Soc. Vol. 18, p. 557, and 919.)

Brick machines have tapered barrels to compress the clay into a solid column. The speed of the auger is greater for

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SMOOTH running; correct in design, accurate and true to pitch, Caldwell gears are bound to please you. We make all types—machine-molded, cut tooth, mortise gears, worm gears, etc. Caldwell Promptness is Traditional. It is at your service. Our stocks assure prompt shipment.

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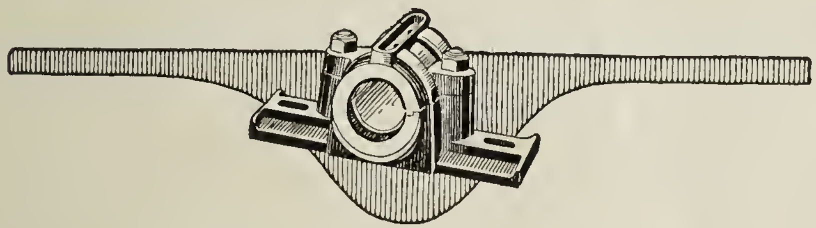

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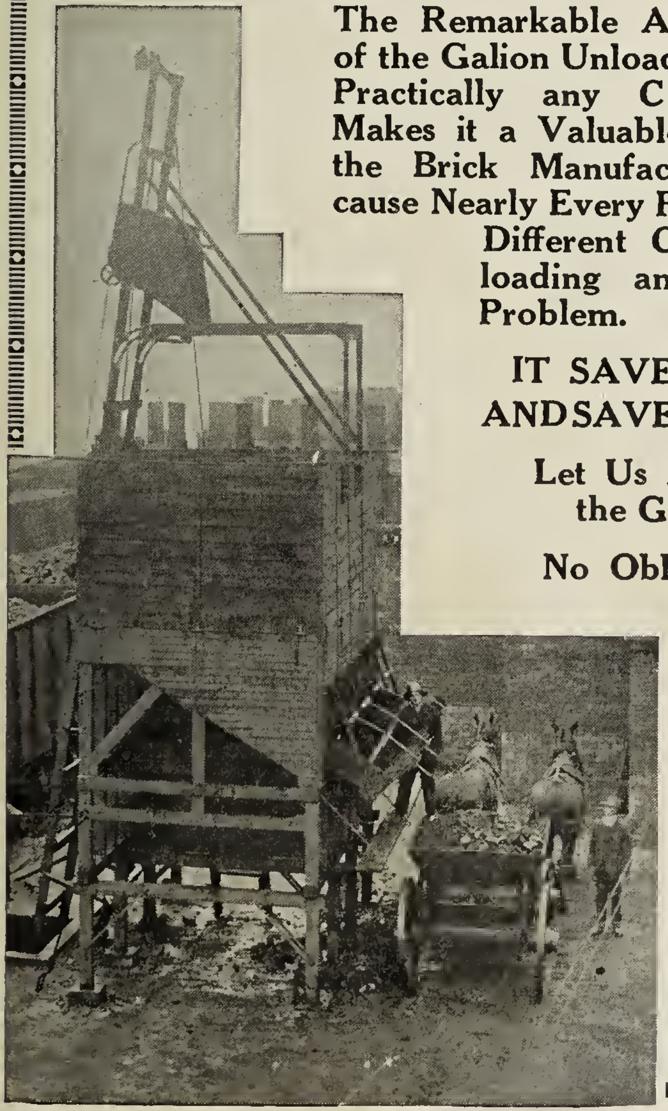

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Announcement

The American Dressler Tunnel Kilns, Inc., will have a message for the clay products industry in the near future which will be of considerable interest.

The message will appear in this paper at the earliest possible moment. In the meantime we are, as usual, ready to serve you.

American Dressler Tunnel Kilns, Inc.
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Dryer, Transfer and Clay Cars,
with Flexible Bearings.
Switches, Turntables and Track.
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Powdered—Granular
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Thereby Producing
Deeper and Richer
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brick machines than for hollow tile. Sewer pipe machines are straight barreled piston presses and the flow of clay is equal over the entire surface of the die. The intermittent delivery is their drawback. They are not troubled with auger lamination.

The auger is a continuous screw located in the center of the barrel and is affixed to and revolves with the main shaft, which has bearings in the rear of the machine. The auger and main shaft must be absolutely central in the barrel or cracked ware will result from irregular pressure.

Auger Speeds

Twenty to twenty-five r.p.m. is common for tile, 30 to 40 for brick, tho speeds of 50 r.p.m. are sometimes used for the latter. When a single machine is used for large and small tile, the speed should be adjusted to suit the larger tile. Column speeds for tile: Ten feet per minute is slow; 15 feet is moderate, and 20 to 30 feet per minute is fast. If the speed is too fast for a hollow ware die, fast and slow areas with corresponding drying strains develop. Too fast a speed for large tile causes uneven movement across the face of the die, as the clay gets away too fast. With slower speeds the clay gathers in front of the auger in a reservoir, where it is compressed, and the pressure is more evenly distributed over the face of the die and followed by a more uniform rate of flow thru the die. When the column moves fast, the plastic solid acts more like a true solid transmitting its pressure in straight lines in the direction of pressure; that is, it will push out in the center and hang on the sides of the barrel.

Types of Augers

The single screw auger is the fastest but must be placed farther from the die to overcome unequal flow and lamination. The double wing auger is more generally used because it delivers the clay to the die in two intertwined streams, thus tending to equalize the pressure and prevent differential flow. The triple auger gives more even pressure than the double, but displaces considerable clay in the machine barrel, develops more friction with consequent power loss and is bad for the difficult clays. Augers may start single and finish double or triple.

Auger Wear

A worn auger allows the clay to slip back between its circumference and the sides of the barrel, decreasing the speed and increasing the power. Alloy steels, such as manganese, chrome, nickel or vanadium steels, will stand more abrasion than chilled semi-steel. These harder steels are more difficult to polish, but this can be accomplished and should be done outside the machine, by grinding with an emery wheel on a flexible shaft, sandblasting or by using the Denny-Renton method of turning in a barrel of gravel. Greaves-Walker suggests an extended lip on the outside front edge of the auger to lengthen its life. One-half inch is about the maximum space allowable between the auger and barrel.

Barrel Wear

The late machines are equipped with replaceable linings, which can be renewed when worn. Many barrels have ribs parallel to the shaft to prevent rotation of the clay. As these collect a coating of clay the moving columns of clay flow on a surface of clay in place of a surface of metal. The Claycraft Company's (Mueller, St. Louis) auger machines have the auger wings undercut at their base to permit the insertion of non-rotating sleeves with vertical bolts fastened to the barrel. These prevent the clay from idly revolving with the auger and the cylinder from heating.

Distance of Auger from Die

Extension rings are used to vary this distance. The determining factors are: Type of machine, speed, raw material

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Clay Working Machinery

Block, Brick and Tile Machines
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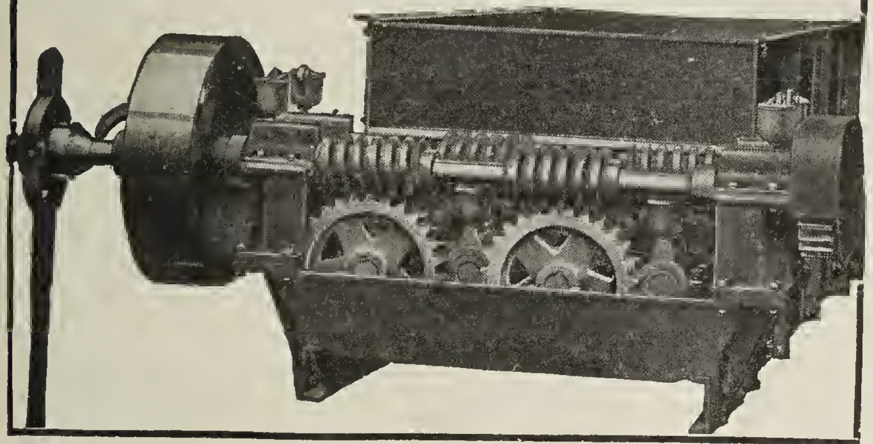

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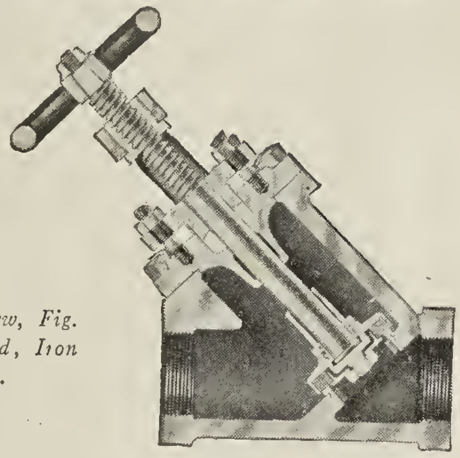

Sectional View, Fig. 296, screwed, Iron Body Y Valve.

Full-Opening Blow-Off Valve

This is a strong, rigid valve with full opening almost in line with the pipe. It is made particularly for a boiler blow-off valve, or for handling thick fluids. Fitted with a Jenkins Renewable Disc which neither sticks nor corrodes.

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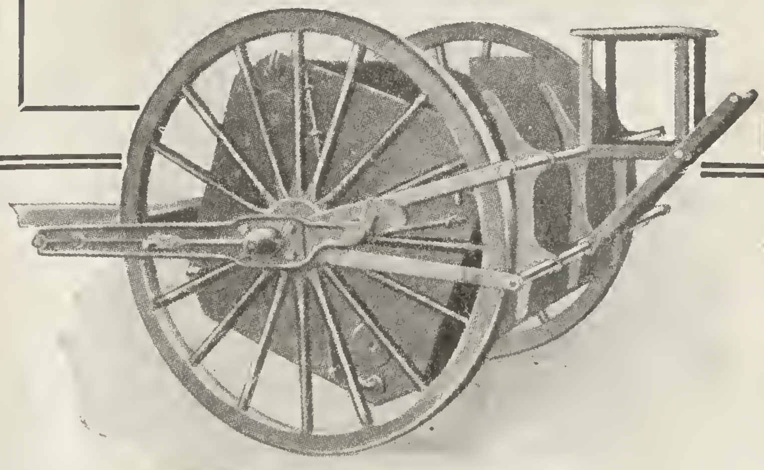

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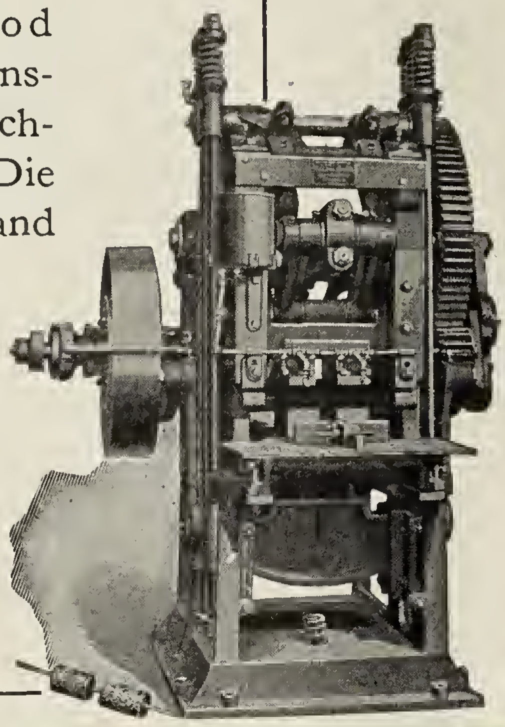

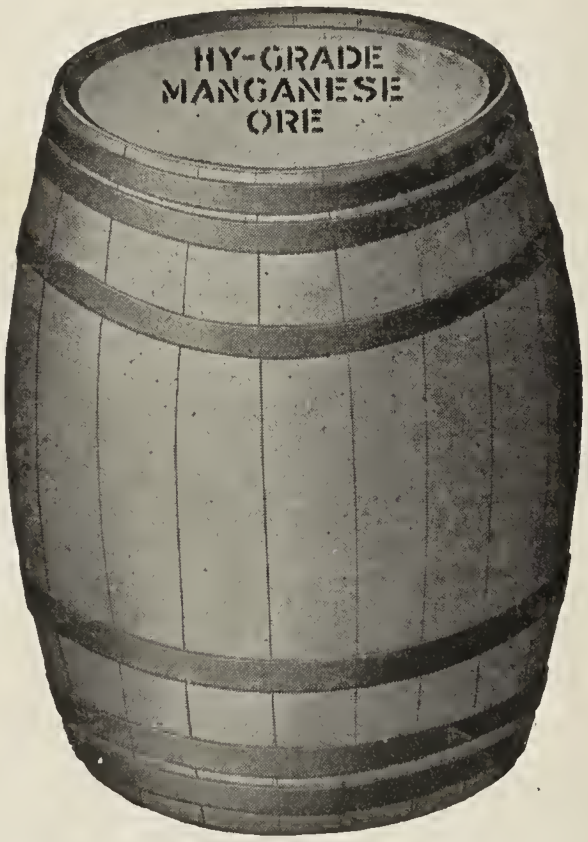

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Miner and Grinders

Especially Prepared for Brick Making

and type of die. With each increase of distance the greater the reservoir of clay and the greater the power consumption.

The die should be placed at the minimum distance for good ware and where the column does not show weaving or irregular flow. This can only be determined by experiment.

Forced Feed

Produced by a small revolving shaft equipped with blades and placed at the clay feed hopper so that it forces the clay down to the auger and prevents bridging and arching. This is better than hand punching to provide a uniform column speed and will assist in eliminating lamination caused by irregular flow.

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Questions and Answers

Best Authorities in Every Clay Working Branch Are Called Into Consultation—Their Advice Is Free to You, Thru These Columns

Address all communications intended for this department to "Editor Questions and Answers, care of Brick and Clay Record," Chicago

USING DRAFT GAGE ON HOFFMAN KILN

1,072. *Nebraska—Can you give us any advice as to the use of draft gages on Hoffman continuous kilns of the tunnel type using natural draft? Do you know of anyone who uses them and what results are gotten?*

We have stack draft which is subject to fluctuations due to changes in the weather and are trying to arrive at some other method than guesswork in setting our dampers. We have an idea that it might be possible to install a draft gage in one of the cast iron caps used over a fire hole which could be moved about as the fire traveled and mudded into a fire hole where it was desired to get an idea of the draft.

Ellis Lovejoy whose work is widely known to the clay products industry has the following to say about this problem: "I do not believe such a gage will be of any value in determining draft conditions. I do not know any one using a gage on such a kiln but I have seen a gage used on a compartment kiln and I considered the results worthless.

Confidence!
Faith!

We have faith in our ability to better your kiln operation and results by equipping them with GATES AUTOMATIC STOKERS. We back this up by our willingness to show you any installation we have made.

This is as fair an offer as can be made by anyone, and, we believe, merits your confidence. Come and see them yourself—no matter how skeptical you may be.

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Adaptable to any Clay
Intense Staining Powers
Various Effects Obtainable
Uniform Analytically and Physically

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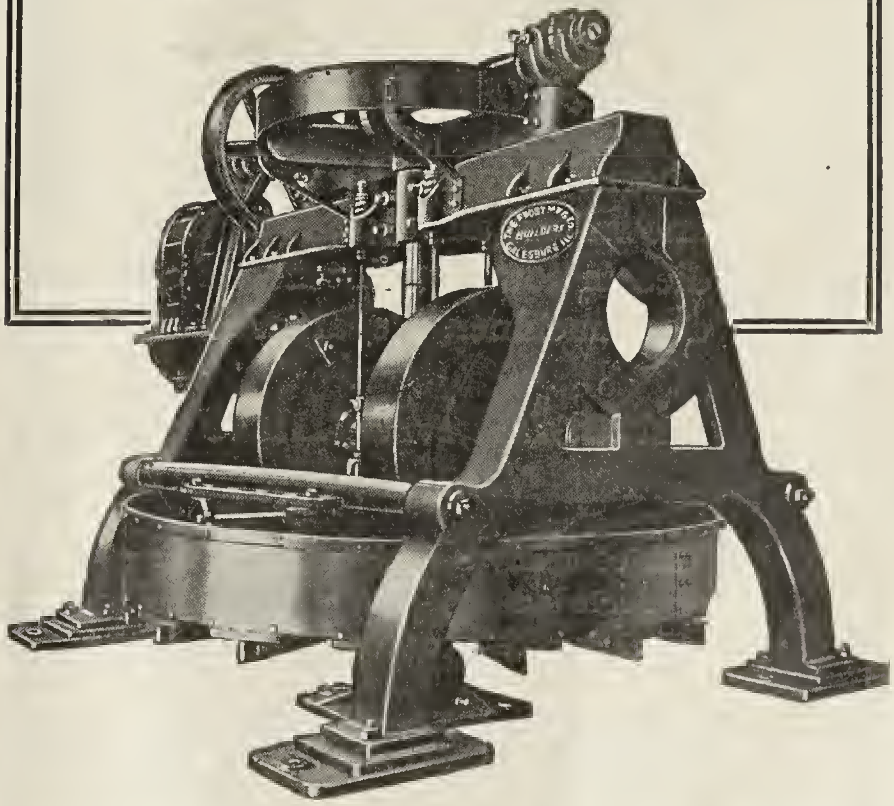

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The Model "F" 6-ton Minster Locomotive has proven itself to be the most practical haulage unit for clay plant use, saving time and labor, and giving uninterrupted service day in and day out.

Made in 2 to 8 ton capacities.

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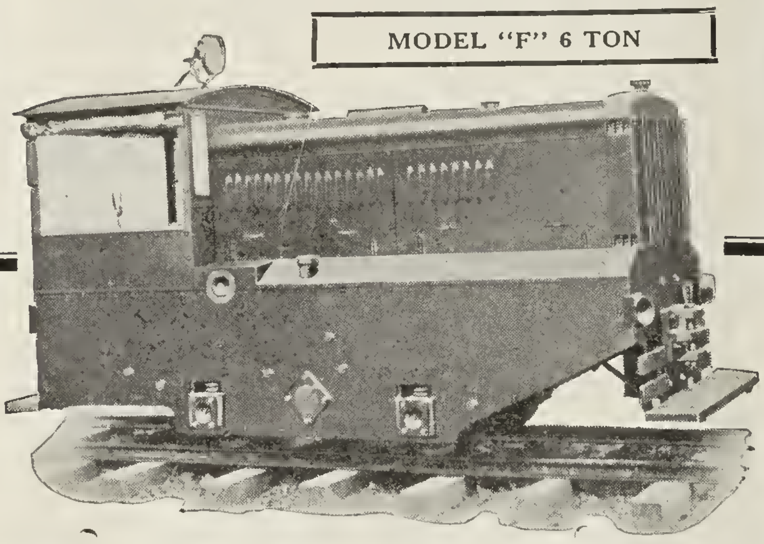
MODEL "F" 6 TON



DIES

Announcement

Charlie Snyder, for many years known as an expert in making dies, is now superintendent of the clay machinery department of the

Lincoln Machine Co.
Minerva, Ohio

This company is ready to serve the clay products industry with dies, cutting and offbearing tables, conveyors and elevators.

Ask about our full roller-bearing, hand-cutting fire-proofing table.

LINCOLN MACHINE COMPANY
MINERVA, OHIO

"Here is the way it acts. It is attached to a compartment and registers a certain draft. The following day it shows less draft and each day less and less until finally it was zero and in some instances was less than zero. In the instance in fixing conditions for duplication of treatment from burn to which I noted its operation, the draft was by fan and presumably fairly constant yet the gage did not give any indication of the draft.

"A gage only shows static pressure (draft) and as velocity pressure increases the gage shows less and less draft.

"When the gage is attached to a section some distance in advance of the fire and which is cold and in consequence the temperature of the gases is low and likewise the volume, it will register a low velocity pressure and a relatively high static pressure. As the temperature of the gases increases likewise the volume, the velocity pressure increases and the static pressure falls and as previously noted may fall to zero when the static pressure is fully taken up by velocity pressure.

"Somewhat reliable data could be obtained by using a differential gage with connections in two compartments but it is too complicated to be of use to the average kiln burner."

R. K. Hursh of the Department of Ceramic Engineering, University of Illinois, suggests: "I can not refer you now to any plant where I know that the draft gages are used on Hoffman kilns. I do know, however, that some users of continuous kilns of this type have felt that the draft gage was at least as satisfactory a means of control as pyrometer equipment and probably better in these kilns.

"It is possible to attach a draft gage to a pipe standard with a metal cup which may be set over one of the fire holes and give a fairly tight seal in sand around the hole. This will give a satisfactory draft reading in any section of the kiln. It is customary to take the draft readings at or near the firing zone, but it is probable that equally satisfactory results can be obtained by measuring the draft in the section of the kiln where the draft outlet is open. The use of draft gages will certainly give some information, and a means of burn."

The Hadfield-Penfield Steel Co., machinery manufacturers of Ohio, submit their viewpoint:

"We do not know of any Hoffman kiln using a draft gage, but if one should be used, it would have to be put in the flue leading to the stack and this is a hard matter in the Hoffman kiln.

"It would not do any good to put a draft gage in one of the cast iron caps over the firing holes as it would vary very much according to the setting of the brick.

"The Bessemer (Pa.) Limestone Co. uses a draft gage in the tunnel leading to the fan and that would be the only place to put a draft gage on the Hoffman kiln, namely in the connection leading to the stack."

⁂

GETTING RID OF SCUM

1,071. *New Jersey—We would like to have your opinion on the following problem.*

A light color buff face brick that we carry in stock has shown a tendency toward discoloration when placed in the wall and exposed to the weather. In one of the jobs the brick were laid fully two months ago and up to this time the discoloration has not shown any sign of fading. The colors range from a light moss green to a dirty olive green.

This is the first time we have ever had any experience with this phenomenon and we are, therefore, considerably puzzled as to its cause and remedy. We are writing you in the hope that you may be able to give us the benefit of your vast experience in this matter.

D. F. Albery of the Northwestern Terra Cotta Co., Chicago, to whom this query was made volunteered the following advice:

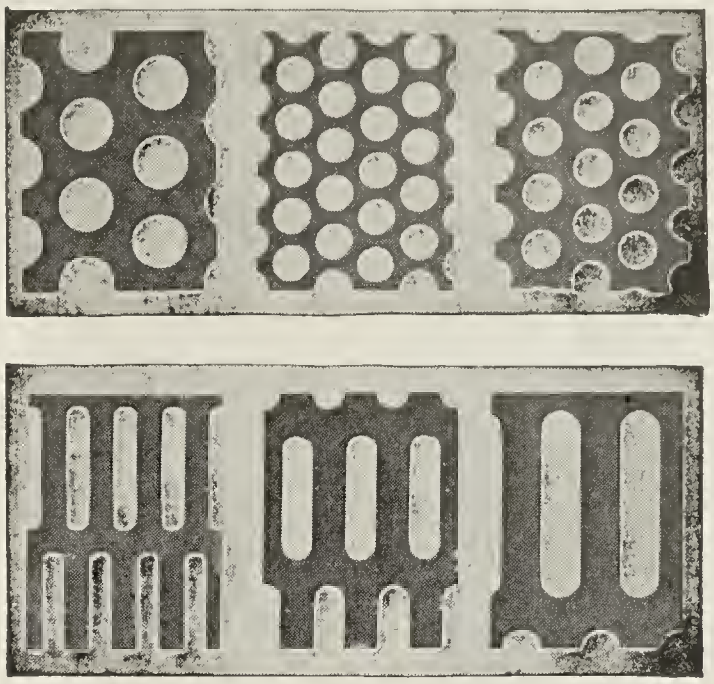
Improve Your Mix
with the
MARION
"RUST SPECIAL"
Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing Rust Feeder and full line of Marion clay plant equipment.

Marion Machine Foundry & Supply Co.
P. O. Box 395
MARION, INDIANA

Perforated Steel Screens



For Screening Clay, Shale, Sand, Gravel, Stone and Cement

All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

Sheets furnished flat or rolled to shape for revolving screens.

THE HARRINGTON & KING PERFORATING CO.
635 N. Union Ave., Chicago, Ill.
NEW YORK OFFICE: 114 Liberty St.

EXCAVATE ECONOMICALLY

Reduce your clay pit costs by cutting overhead charges of expensive steam shovels as well as running, fuel, and repair charges.

Read what the Yankee Hill Brick & Clay Company say of their electrically operated Bay City Excavator:

"After years of trouble, inconvenience, and delay in connection with hauling coal and water, repairing leaky flues, boilers, and water lines, it is a great relief to operate a machine that gets its coal and water thru a pipe containing three wires."

Send for details.

THE
Bay City Dredge Works
BAY CITY, MICH.

The Pilot
You Need in Kiln Work
S.S.

Guess work and chances are eliminated the moment the pilot steps on the bridge. *A carefully charted course is rigidly followed.*
You too—in your kiln work—can secure the benefits of following a carefully charted course. Before each burn, "map out your temperature route" to pilot your burners.
Avoid the shoals of temperature variations. Eliminate loss of time and waste of fuel. How you can do this through the installation of Thwing Pyrometers will be gladly explained upon request.

THWING INSTRUMENT COMPANY
3347 Lancaster Ave., PHILADELPHIA, U. S. A.

Thwing PYROMETERS

131

"This phenomenon has been ascribed to:

"1. The deposition of vanadium salts by leaching from the burned clay.

"2. The growth of algae on the surface under humid conditions.

"3. The leaching out of iron salts and their depositions on the surface.

References: A.—Seger—Collected Writings
1. Vanadium—1—385
2. Algae—1—359
B.—C. W. Hill
Journal, American Ceramic Society June 1922, Page 51

"Oxalic acid and zinc sulphate will remove these stains. An impervious, or at least a harder burned, material is the only sure preventative for this scum, regardless of the cause of the same."

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

DEATH TAKES H. B. OSTDIEK

Herman B. Ostdiek, a pioneer brick manufacturer of Ottumwa, Ia., died in St. Joseph's hospital at his home city recently. He was 68 years old and born in St. Paul, Lee County, Ia.

F. N. BEEGLE SUCCUMBS TO ILLNESS

Frederick N. Beegle, president of the Beaver Clay Mfg. Co., New Galilee, Pa., and president and director of the Beaver Refrigerator & Potteries Co., New Brighton, Pa., died in a hospital at New Brighton, Pa., August 16. He was 60 years old and in addition to being active in the clay working industry was interested in many other industrial and financial fields, his activities in other fields including the presidency of the Standard Gauge Steel Co., the Union Drawn Steel Co., the Ideal Tool & Mfg. Co., and the directorship of the Copper Clad Steel Co., Pittsburgh.

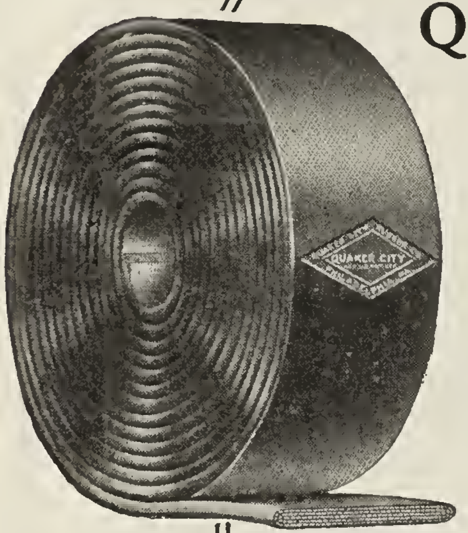
D. J. KENNEDY CLAIMED BY DEATH

D. J. Kennedy, president of the Darlington (Pa.) Brick & Mining Co., quite prominent in both the brick and building supply industries, passed away at Poland Springs, Me., on Sunday, August 5. Altho he had been ailing for several years, Mr. Kennedy was apparently in good health within a short time of his earthly departure.

Mr. Kennedy was born in Pittsburgh, started his business career in a very humble manner and succeeded in building up a large building supply business in his native city. At the time of his death he was president of the D. J. Kennedy Co., Bulger Block Clay Co., Darlington Brick & Mining Co. and the Superior Mining Co.

J. M. ADAMS PROMOTED TO PRESIDENT

J. M. Adams, who has been secretary and general manager of the Ironclay Brick Co., Columbus, Ohio, with offices in the Ruggery Bldg., has been elected president and treasurer to fill the vacancy caused by the death of the late W. D. Brickell. Mr. Adams has been connected with the Ironclay Brick Co. for the past 24 years and a large measure of its success is due to his efforts. David Lehman, who has been sales manager, was promoted to secretary and general manager to take Mr. Adams' place. Mrs. W. D. Brickell has been elected as a



RUBBER BELTING

Quaker City—

A friction surface rubber belt made purposely to stand hard work, and is doing it.

On hard transmission duty including main drives in brick and clay manufacturing is where QUAKER CITY will help you.

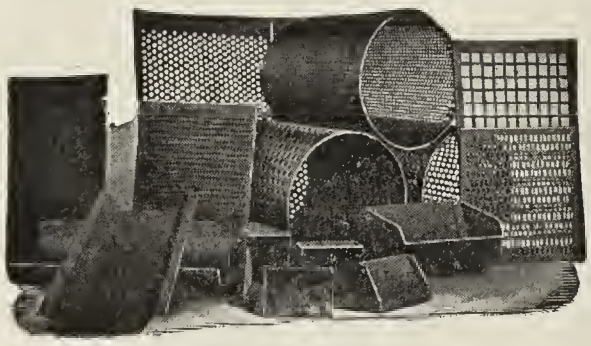
Let us estimate on your belting requirements—transmission or conveying.

Quaker City Rubber Co.

Mfrs. Mechanical Rubber Goods; Auto Tires and Tubes

Philadelphia Chicago Pittsburgh New York

HENDRICK SCREENS
FOR ALL PURPOSES



ELEVATOR BUCKETS
CONVEYOR TROUGH and FLIGHTS
STACKS, TANKS,
GENERAL SHEET and
LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL
PLATE CONSTRUCTION

Ask for your copy of the Perforated Metal Handbook

HENDRICK MFG. COMPANY
CARBONDALE, PA.
NEW YORK OFFICE: 30 Church St.
PITTSBURGH OFFICE: 544 Union Trust Bldg.
HAZLETON, PA., OFFICE: 705 Markle Bank Bldg.

Russell

TUNNEL KILN

Installed in your plant will—

—Save labor
—Save fuel
—Burn product more uniformly

Send our engineers your burning data. They will figure savings possible, free of charge.

Russell Engineering Company
Boston ST. LOUIS New York

IDEAL LOCATION for CLAY PLANT

The Lake Erie, Franklin & Clarion Railroad serves the greatest industrial section in the world.

Of particular interest to prospective builders of clay plants is the combination of resources found along the right of way of the L. E., F. & C. clay adaptable for fire brick, face brick, paving brick, common brick, tile, etc., along with an abundance of high grade coal, are found in adjacent deposits. Power is available, trained labor is present in numbers, and a fertile market for clay products is adjacent. Transportation connections with all large lines.

When sending for information specify what type of material you are interested in

Lake Erie, Franklin & Clarion Railroad
FRANKLIN, : : : PENNA.

NEW YORK BELTING & PACKING CO.
FOUNDED 1846
INCORPORATED 1856

Rubber Goods
for the Clay Industry

Test Special Rubber Belting
Indestructible Conveyor Belting
Elevator Belting
Firo Superheat Sheet Packing
Indestructible Sheet Packing
Cobbs Piston Packing
Steam Hose Water Hose
Pump Valves

NEW YORK BELTING & PACKING CO.
New York Boston Chicago
Philadelphia Pittsburgh
St. Louis Salt Lake City
San Francisco

THE MINTER SYSTEM
200 Lbs. Coal per Ton of Ware

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. **Saving first cost of six Kilns.**

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. **Saving first cost of 6 tunnels and equipment.**

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

DON'T BUILD BEFORE YOU KNOW

The Minter System Plants are Producing the Cheapest Building Material made in America today.

The Minter System

HOME OFFICE
Albany, Georgia

BRANCH OFFICE
215 Doctors Bldg.
Columbus, Georgia

How Strong Is Your Back?

Suppose *you* had to unload a car or two of coal by the hand shoveling method? "Ouch! Oh, my back!" We venture to remark that your language would probably excel your back in strength. And it is all unnecessary —all too expensive—when you can do it so easily, so efficiently with a

ROBBINS
Portable Car Unloader

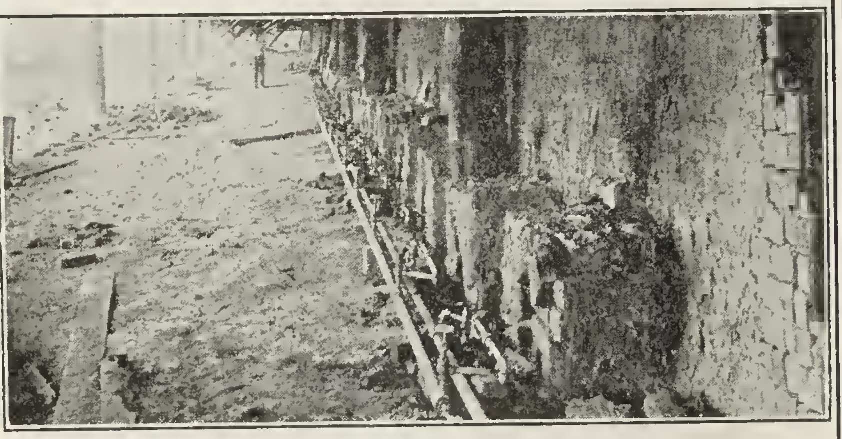
It will load directly into a motor truck or wagon, filling the largest conveyance in a few minutes or it can be extended to serve a storage pile by the use of a separate portable conveyor as shown above.

The Robbins Portable Car Unloader can be operated either above or below the rails. It will handle 30 or more tons per hour which means greatly reduced handling costs and elimination of demurrage charges. Thus it pays for itself over and over again.

Want the Facts?

They are yours for the asking. Remember that the Robbins Portable Car Unloader does not cost a lot of money to buy but it saves a lot of money when used. Think it over. Then write for the details.

Robbins Machinery & Supply Co.
444 W. Grand Ave. Chicago, U. S. A.
"Machinery for Moving Merchandise"



THE selection of your first investment in oil burning equipment is an important undertaking, not only from the standpoint of cost but from the standpoint of maximum income return.

In the complete line of Smokeless Oil Burners there is a burner that will match in price any other burner on the market.

And when you buy Smokeless Burners you are assured of clean efficient combustion and permanent satisfaction.

The Smokeless Oil Burner Co.
BUCYRUS, OHIO

Complete Oil Burning Systems

member of the board of directors in place of her late husband. C. J. Near, of Cincinnati, vice-president, was at the meeting which effected the reorganization. Mr. Adams is also president of the American Face Brick Association.

G. O. FRENCH LEAVES CONSOLIDATED

A change in management has been made at the plant of the Consolidated Clay Products Co. G. O. French, who has been associated with the firm for several years, has resigned and at present Edward Rommell is acting as general manager and treasurer. Frank Snyder of Massillon, Ohio, is president. Old policies will be followed.

W. H. GIFFORD NOW WITH BOWEN

An important addition to the Bowen Brick & Supply Co., Cleveland, Ohio, and one which marks the return of one of the best known brick men to the Fifth City, is announced in the appointment of W. H. Gifford as vice-president and general manager of the Bowen interests.

Mr. Gifford has one of the widest followings in Cleveland among the building interests. Several years ago he was one of the executives of the then Cleveland Builders Supply Co. He left Cleveland to become identified with the Wisconsin Lime & Cement Company, and later joined the Reliance Brick Co. at Kansas City.

MYERS MANAGING DICKEY'S TENNESSEE PLANT

Mr. and Mrs. H. G. Myers of Rich Hill, Mo., have left for Chattanooga, Tenn., where Mr. Myers will take charge as manager of the Dickey tile plant in that city. He lately returned from Kansas City and said he learned that the Dickey plant in Rich Hill will not resume operations for some time, probably six months or a year, due to the unsettled conditions. Mr. Myers was manager of the Rich Hill plant for three years.

REMEMBERS OLD EMPLOYES IN WILL

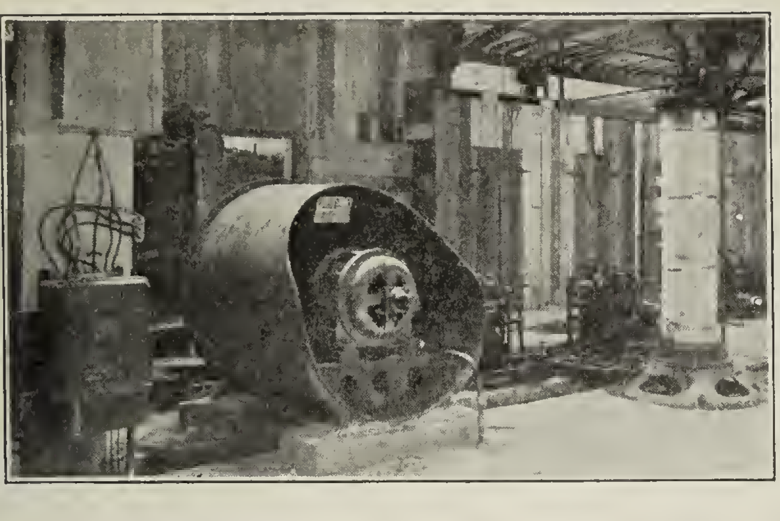
Those who have been in the employ of the Denver Sewer Pipe & Clay Co. for ten years, and those who served ten years with the company but who are now in retirement as a result of causes beyond their control, will benefit by a fund of $25,000, to be known as the "Denver Sewer Pipe & Clay Co.'s Old Employes' Fund," which is authorized in the will of the late William F. Geddes, owner of the business, who died recently at his home in Denver, Col.

The will directs that a committee of five, including the president, secretary and superintendent of the Denver Sewer Pipe & Clay Co., the others to be selected by employes to benefit, be named to serve without compensation and to direct the disbursement by the executors and trustees of the fund. The principal and accumulations from the fund are to be used before the expiration of ten years, and if anything remains at that time it is to be distributed equally between those who were employed for the ten years prior to Mr. Geddes' death and to those who continued to be employed until the expiration of the period.

NORAH BINNS LEAVES A. C. S.

Members of the American Ceramic Society, who have come to regard Miss Norah Binns as an important factor in the success of that organization, will be surprised to learn that she has left the society and has opened a book shop at Alfred, N. Y. She is very enthusiastic about her "Box of Books" as she calls it and her friends in the ceramic industry wish her all possible success. In writing to Brick and Clay Record, Miss Binns says, "I shall miss seeing my friends every February, but I wouldn't trade my 'Box' for any office in the world."

Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

Ask for information regarding T-J System of Burning Oil.

Tate-Jones & Co. inc.

Furnace Engineers Established 1898

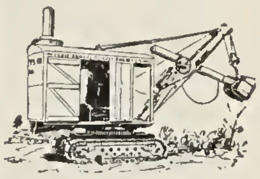
PITTSBURGH, PA.

New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis

"WITH ONE MAN and one ERIE Shovel, we easily get our 300 cubic yards per day. This is sufficient to take care of the daily output at each of our 3 plants, but we could easily increase this output if necessary. In our opinion, the ERIE is *the* shovel."—*Edw. T. Conley, Sec'y, Bradford Brick and Tile Co., Bradford, Pa.* (Owners of 3 ERIES.)

For larger output than the above—500 to 600 cubic yards per day, or more—it is advisable to use two men on the shovel. But when your plant requirements are not too great an ERIE and one man will serve.

We will be glad to send you data showing just what you can do with the ERIE. Write us.



ERIE Shovels can be had with broad tired traction wheels, standard gauge car wheels, or on ERIE lubricated caterpillar type mounting. All interchangeable on the same truck frame.

ERIE STEAM SHOVEL CO.

Formerly Ball Engine Co.,
Erie, Pa., U. S. A.

Builders of ERIE Steam Shovels and Locomotive Cranes

ERIE Revolving Shovels ERIE Steam Shovel Co Erie Pa.

BEHIND EVERY RELAYING RAIL

FOSTER'S QUALITY GUARANTEE
FOSTER'S SERVICE GUARANTEE

30% to 50% below price of new rails.

Shipped subject to inspection and approval at destination.

1 Ton or 1000.

L. B. FOSTER CO., Inc.
Pittsburgh — New York
WAREHOUSES:
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HAMILTON, O.

Phone, Wire, or Mail Inquiries Given Immediate Attention

Relaying Rails, New Rails, Frogs, Switches, Bolts, Nuts, Etc.

25,000 Tons in Stock

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PITTSBURGH—PENNSYLVANIA

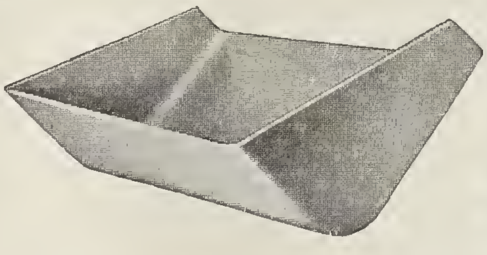


Fig. 132 **Round Heel Shelf Bucket** for handling damp materials which will not discharge readily from other styles of buckets.

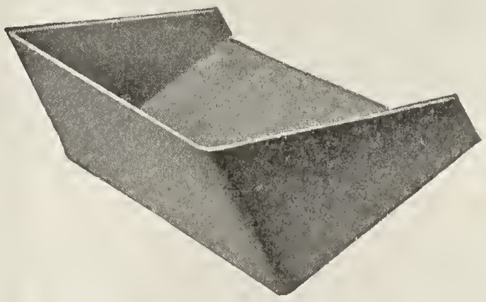


Fig. 131. **Square Heel Shelf Bucket**, same as Fig. 132, with the exception of the heel.

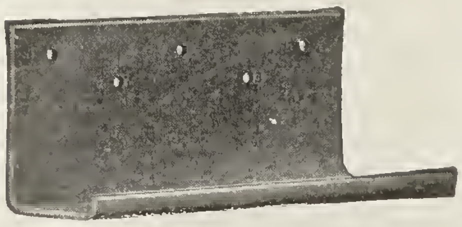


Fig. 1076 **Flat Bottom Open End Shelf Bucket** for handling wet, sticky substances which will not discharge readily from other styles of buckets.

SALEM
Genuine

Elevator Buckets

Since 1880, when Salem Buckets were awarded First Premium for superiority, no other make of bucket has approached the Salem in quality, long wear and unusual service. It is made in many different sizes and gauges of steel ranging from 24 gauge to 6 gauge, and is adaptable for handling materials of practically any size, shape or weight.

Our ability to furnish special buckets made up in accordance with your specifications enables us to offer excellent service and prompt delivery.

Write for Catalog 3625

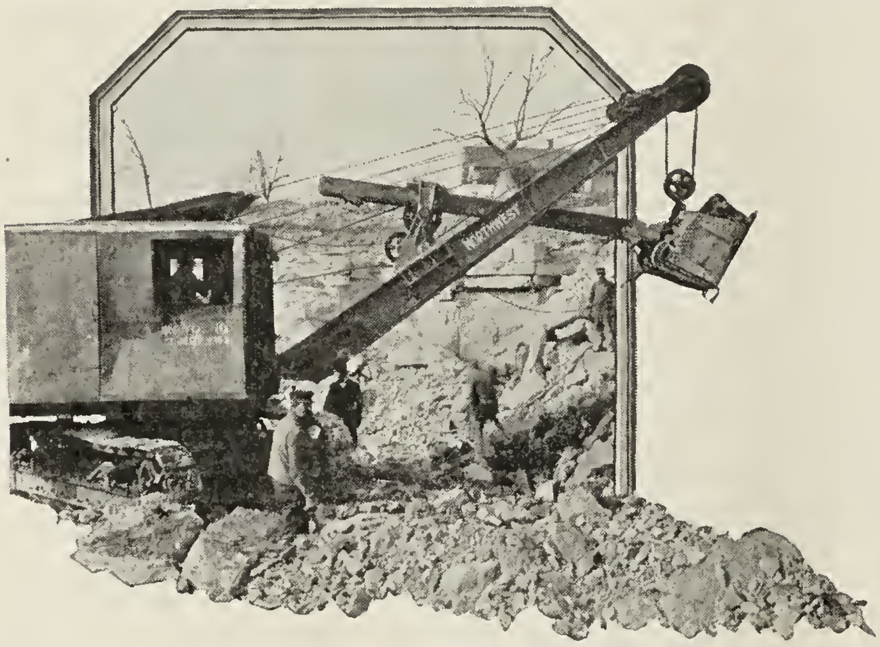
MULLINS BODY CORPORATION
Successor to
W. J. CLARK CO.
101 Mill St., Salem, Ohio

PLANT BETTERMENT SERVICE

A sincere interest in your problem, together with common sense methods and a broad experience makes this service highly profitable.

Write for details

WALLER CROW, INC.
Engineers
COUNSELLORS IN INDUSTRIAL OPERATION & FINANCE
327 S LA SALLE STREET
CHICAGO



The Brick plant operator knows the value of steady, untiring operation. His plant operates as long as the cars continue to dump clay. When the cars stop production stops.

This is the secret of Northwest Capacity. With a Northwest Gas shovel there are no pauses for breath during stoking periods or water taking—it's one steady dig all day long.

NORTHWEST ENGINEERING CO.
1224 STEGER BUILDING
CHICAGO

NORTHWEST
GAS or CRANES · SHOVELS · DRAGLINES ELECTRIC

Thru her very efficient work, Miss Binns has done a great deal for the American Ceramic Society and the ceramic industry in general. It is with much regret that her friends in the ceramic industry hear that she has left her position.

LEO KRUEGER NOW SECRETARY OF CLEVELAND BOARD

LEO A. KRUEGER

Leo A. Krueger, president of the Cleveland (Ohio) Clay Products Co., has been appointed secretary of the Cleveland Supply Dealers' Board, in addition to his office as treasurer of the same body. The office was previously held by Wm. H. Zelt.

The Cleveland Board is one of the livest groups of retail supply dealers in the entire country. Mr. Krueger has been one of its strongest supporters for many years and he is held in high favor among his fellow merchants. The growth of the Cleveland Clay Products Co. under the leadership of Mr. Krueger has been constant and healthy, an unmistakable evidence of his aggressive business ability. He is also a devoted booster of the Ohio Builders Supply Association, having been one of a group of dealers who underwrote it several months ago to provide finances for its greater development and service to the industry.

K. & K. INCREASE CAPITAL

The K. & K. Brick Co., of Los Angeles, Cal., has increased its capital stock from $120,000 to $250,000, it is said.

SAN LUIS BRICK CO. MOVES

Offices of the San Luis Brick Co. of San Luis Obispo, Cal., has been moved from Osos Street into the new Younglove building at 1124 Broad Street.

NEW PLANT FOR CALIFORNIA

The Clay Products Co. is to build a plant in Fullerton, Cal., for the manufacture of tile and other clay products, to cost $85,000, and to be located about one mile south of town. The company has offices in the California Hotel Building.

FORM COMPANY FOR $1,500,000

The California Clay Products Co. has been organized in Los Angeles, Cal., with a capital of $1,500,000, and will erect a tile and brick manufacturing plant on a 12 acre site near Los Angeles, it is reported. Construction of the first unit of the plant, which will cost $250,000, is to be started within 60 days; the other units, costing an equal amount, will be built later. Those back of the project are Arthur W. Savage, Victor Kremer, R. B. Keeler, S. C. Hagen and W. H. Hamaker.

GARBER PRODUCING MILLION A MONTH

Nearly a million brick a month is now the output of the plant of Harvey Garber at Olive, Cal. These are delivered by a fleet of trucks to all parts of Orange County. Harvey Garber was a building contractor for many years before taking charge of the brick plant. The enterprise was moved to Olive last May because of the superior quality of clay found there. This he had had thoroly tested at the Raymond I. Osborn laboratories in Los Angeles and the brick from the clay was pronounced first class both as to strength and absorption.

Mr. Garber is especially pushing the use of brick in Ideal wall construction. He has changed his kilns from the oil-burning to the gas-burning process.

CLAY AT BETTER HOMES SHOW

At the "Better Homes" exposition held in the Auditorium at Denver, Col., recently, the following firms maintained attractive exhibits: Denver Pressed Brick Co., Denver Mantle & Marble Co., and the Denver Terra Cotta Co.

INVESTIGATING SITE FOR PLANT

Durango, Colo., is being investigated as to the possibilities for installing a new process brick manufacturing plant. If the location is favorable, a new pressed brick plant will be erected similar to one which is now operating in the near vicinity, Lightner creek. Durango will gladly welcome the addition of such an industry to its community.

COMMON BRICK COMPANY ORGANIZED

The Windsor Locks Brick Co., Inc., Windsor Locks, Conn., is a recent incorporation with a capital stock of $25,000, to make and manufacture common bricks. Henry Mandirola, of Windsor Locks, is one of the incorporators.

BUYS CONNECTICUT PLANT

According to a report, John H. Connelly of New Britain, Conn., has purchased the Murray brick works at the Clayton crossing, Newington, Conn., for a consideration said to have been $50,000. The new owner plans to operate the plant thruout the entire year.

McDONALD INCREASES CAPACITY

Considerable new machinery has been recently installed in the brick plant of the McDonald Brick Co., at Ludowici, Ga., and improvments of an extensive nature made about the plant generally, increasing the total capacity to about 50,000 brick per day.

PLAN TO BUILD $300,000 PLANT

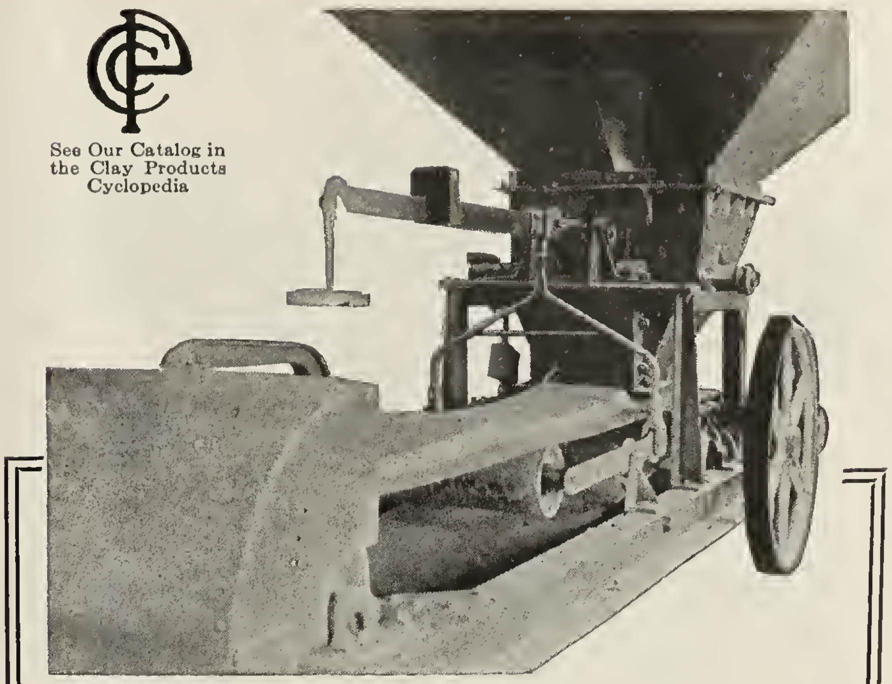
According to a report, the Illinois Clay Products Co. at Oglesby, Ill., has secured a lease on clay lands located in Morris, Ill., and is planning the erection of a plant to cost approximately $300,000. Building of the plant has not yet begun but will be started as soon as the company's plans take definite shape. The project will most probably bring with it a housing problem which will have to be solved by building homes for employes. A railway spur estimated to cost $14,000 will have to be built.

The Haeger Tile Co. of Aurora is now working some of the clay lands near the lands covered by the lease of the Illinois company. The Haeger company has a branch factory in Coal City, Ill., which is very close to Morris.

THREE MEN KILLED IN KILN COLLAPSE

On Friday, August 17, a round down-draft kiln which was undergoing repair at the plant of the General Refractories Co., Rockdale, Ill., collapsed suddenly, killing three men. About 15 men were at work in and around the kiln when the accident occurred. All of the men working inside the kiln were fortunate enough to escape before the crash came. The men who were killed were working in the pit and had started to get out when they were caught by falling brick. One man was injured, altho not seriously.

The accident appears to have been a freak, as several kilns had been repaired in a like manner during the past few months and not one of them showed signs of collapse. This kiln was not in as poor condition as some others which had previously been repaired. Newspaper men in their local report put forth the idea that the vibration from a riveting hammer being used on the kiln bands caused the collapse. This hardly seems probable, but may have contributed.



See Our Catalog in the Clay Products Cyclopedia

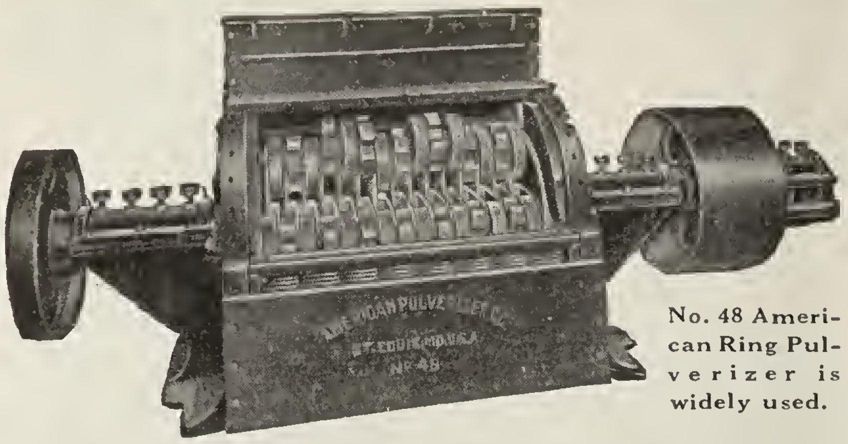
GUESS WORK—*A Relic of Antiquity*

In ancient times the rule of thumb methods held sway, because refined means of measurement were undiscovered and present day methods of manufacture undeveloped.

Don't tolerate guesswork in your plant today. Mixing is now done scientifically and accurately with the Schaffer Poidometer. It mixes and feeds automatically and exactly, and eliminates a clay too "short" or too "fat."

Inquire of any Poidometer installation

Schaffer Engineering & Equipment Company
2828 Smallman Street
PITTSBURGH, PA.



No. 48 American Ring Pulverizer is widely used.

The World's Greatest Crushing Force

Here is a crusher that does its work with rings—powerful rings of manganese steel. A one ton striking force and a centrifugal force of 3500 pounds is behind every blow. Just imagine such power applied 10 times a second at any given point. That is the disintegrating principle of the

American Ring Pulverizer

If you pulverize a refractory material, you will be interested in the pulverizer that will do your work at the *proved* lowest operating cost; that has a guarantee unapproached by any other crusher in the world and that has hundreds of friends who are in the business of crushing.

Just let us know that you have a crushing problem and a trained engineer will be on the job. Remember, of course, that your invitation for him to call is without commitment on your part.

American Pulverizer Company
"We Crush Everything"
18th and Austin Sts. St. Louis, U. S. A.

The coroner's jury, which held an inquest August 21, exonerated the company from all blame and declared the accident unavoidable.

OLD BRICK CHURCH STANDS FOR 75 YEARS

A tribute to the lasting qualities of brick is perhaps the oldest church in Cook County, Ill., built of this material. It has stood upon the same spot for more than 75 years and today is used just as regularly as it was when first erected. It is the First Methodist Episcopal Church at Park Ridge. Thru all these years it has stood a silent witness to the progress and expansion of the community in which it is located. To number those who have worshiped within the edifice would no doubt be an impossible task.

The brick in the structure were made on or near the ground on which the building stands. They cost altogether $991. Brick of modern manufacture will convert this historic landmark into a more pleasingly appearing church of present day architecture.

This is claimed to be the oldest brick church in Cook County, Ill., having stood in the same location for over 75 years. It is to be remodeled

CANNELLTON TO OPEN NEW ADDITIONS

Early in September, the Cannellton (Ind.) Sewer Pipe Co. will place in operation its large new additions, which double the former capacity of the plant. Henry Clementz is general manager of the company. Henry Bosquet, of Louisville, Ky., for years has been actively interested in the company.

GETS MANY SILO INQUIRIES

The management of the National Clay Products Silo Co., Muncie, Ind., declares that inquiries regarding silos have greatly increased during the present month and the business in this department is more than double what had been anticipated for August. In the last week the company had contracted for the building of silos in several Indiana counties and in a number of adjoining states.

This increase in business is taken as a certain indication that materials furnished by the company are all that they are claimed to be and that they have given satisfaction. In conferring with a prospective builder, the National Clay Products Co. makes it a rule to give him as references someone in his immediate neighborhood who has used some of their products and the commendation of such persons has been found one of the best business getters that the company could find. The company specializes in the manufacture and sale of National Hollow Building Tile, and mat face bungalow blocks for homes, garages, barns and factory buildings.

CONSIDER NEW PLANT FOR IOWA

The Hampton (Ia.) Brick & Tile Co. has tentative plans under consideration for the erection of a new local plant for the manufacturer of brick and tile products. It will consist of a main one-story and basement building, with smaller adjoining structures, estimated to cost close to $80,000, including equipment. C. F. Osborn is president.

BUILDS HUGE CEMENT PLATFORM

Ground water troubles, with which the Des Moines (Ia.) Brick & Tile Co. has long been troubled, will be overcome if the new waterproof dryer and cement platform, upon which the dryer is built, prove to be efficient. The plant is located on the banks of the Des Moines River and the factory has been troubled with water backing up into the dryer during the flood periods. The concrete platform, which is 54 by 125 feet in size and six feet thick, will, it is hoped, prove an effective barrier to the water.

A number of other improvements are being made at the plant, including a new 12 tunnel radiated heat dryer. Electric motors have supplanted the steam engines and electricity will be used thruout. When the remodelling work has been completed, the company will manufacture hollow tile instead of the drain tile which it formerly made.

CHARTER ISSUED TO NEW COMPANY

With a capital of $1,200, the Atlas Clay Products Co., of Madisonville, Ky., is reported chartered by E. H. Penick, N. M. Mitchell, and A. F. Fox.

KENTUCKY GETS RATE SUSPENSION

The Kentucky Clay Products Association in a separate movement before the Kentucky State Railroad Commission, filed thru Norman, Quirk & Graham, Louisville attorneys, on material compiled by B. A. Word, traffic expert working for the association, secured an order from the state commission, suspending intrastate increases, pending a hearing of the reasonableness of the rates, this hearing being set for September 12.

The Kentucky Clay Products Association at its annual meeting in Louisville in the spring, spent most of its business session in a discussion of the brick freight rate matters, and the entire industry of the Southeast has been working diligently in this connection.

ALABAMA COMPANY INSTALLING MACHINERY

Business at the Alabama Brick & Tile Co. of New Orleans, La., has been increasing to such an extent that $4,000 worth of additional machinery is being installed to increase the capacity of the plant. Mr. Neher, associated with the company, reports that from February of this year to the present time they have done more business than they did during the whole year beginning February, 1922, and ending 1923.

FIRE DAMAGES MISSISSIPPI PLANT

The brick manufacturing plant of M. M. Lockard, in Bonita, Miss., has been damaged by fire to the extent of $10,000.

WILL BURN OWN BRICK FOR HOUSES

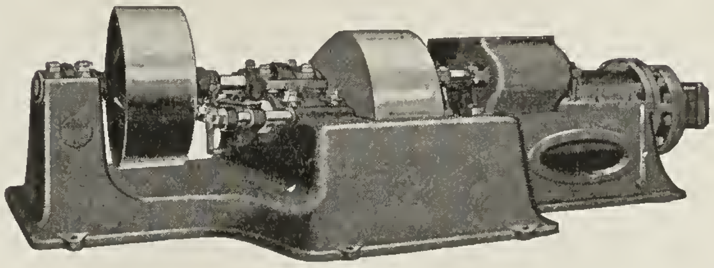
Dr. H. P. Gregory, of Mexico, Mo., is planning to erect five brick houses on lots that he owns in that city and is firing his own brick from clay which he is mining on the place. He is planning to manufacture sufficient brick for the five homes. He has secured a contractor to do all the work and will erect two houses first, which will be the cost finders for the rest.

BRICKLAYERS WANT $1.75 AN HOUR

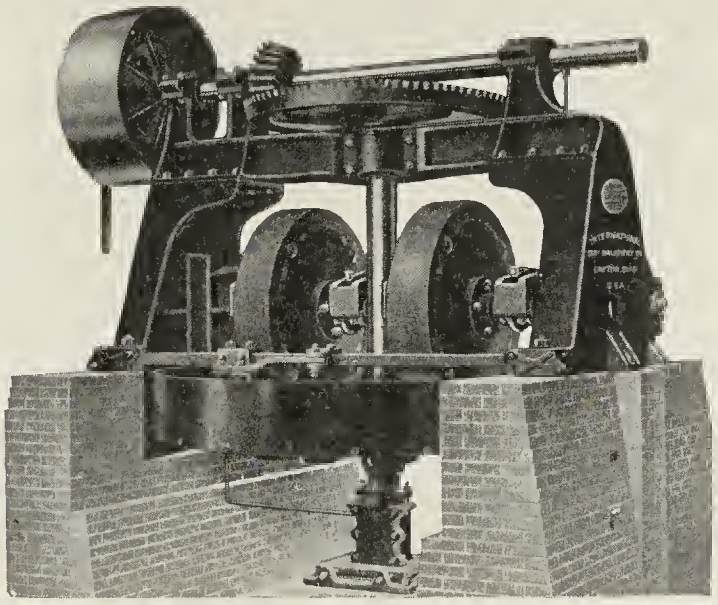
Local unions of bricklayers have informed St. Louis, Mo., building contractors that, effective November 1, 1923, the wage scale shall be $1.75 an hour, an increase of 25 cents. There is a scarcity of bricklayers in St. Louis and it is believed the new demand will be granted. Plasterers are already receiving $1.75 an hour. At present bricklayers and stone masons are being paid bonuses above the union scale which amounts, with their wages, to approximately $1.75 an hour. Some bricklayers are obtaining $20 a day. St. Louis carpenters were recently granted $1.50 an hour, an increase of 25 cents.

INTERNATIONAL

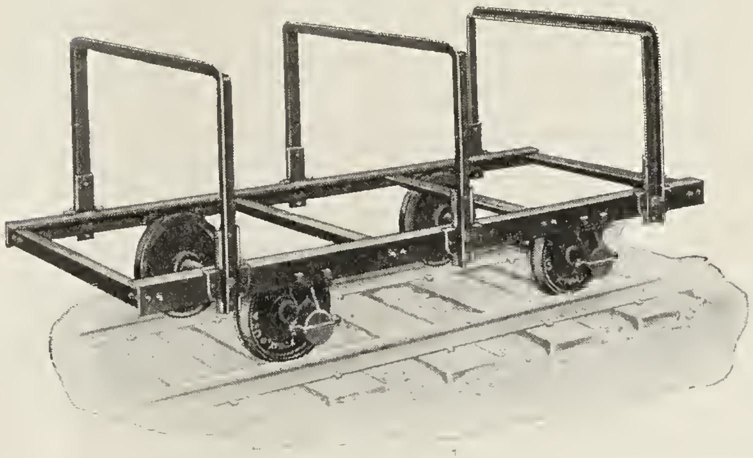
Equipment Pays



Auger Machines
Pug Mills



Dry and Wet Pans



Dryers and Cars

See Our Catalog in the Clay Products Cyclopedia

INTERNATIONAL CLAY MACHINERY CO.
DAYTON, OHIO

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EXPLOSIVES
for quarrying

ALTHOUGH large quantities of Atlas Ammite are used because it will not freeze under any condition, this Atlas product is more than a winter explosive. It is an all-year-round standby with quarry men—an explosive that is equally efficient, powerful and economical at any season of the year. Furthermore, Atlas Ammite will not cause headaches even when handled in enormous quantities. It keeps indefinitely under proper storage conditions—age has no harmful effect upon it. Let the Atlas Service Man show you how Ammite can be made to cut blasting costs on *your* work. Write nearest branch.

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Branch Offices:
McAlester, Okla.; New Orleans, La.; New York City, N. Y.; Norristown, Pa.; Philadelphia, Pa.; Pittsburg, Kans.; Pittsburgh, Pa.; Pottsville, Pa.; St. Louis, Mo.; Wilkes-Barre, Pa.

PUTS BAN ON TILE IN ST. LOUIS

St. Louis contractors and builders, who for the past six months have been permitted to substitute some tile for brick in building walls, in the future will have to adhere strictly to the building code requirements as to the use of brick. An announcement to this effect has been made by Director of Public Safety James N. McKelvey.

About six months ago, when there was a shortage of brick in St. Louis, McKelvey, following a conference with Mayor Henry W. Keil, agreed to allow builders to use nine inches of tile and four inches of brick in construction walls for buildings not exceeding two stories in height. The code requires nine inches of brick and four inches of tile, stipulating that not less than nine inches of brick can be used.

EXPECT TO BUILD PLANT IN MONTANA

The construction of the Seven Veins Coal Co., DeSmet, Mont., which is as yet in its infancy, will be again resumed early this autumn. Samples of silica clay, yellow clay and a high class shale were sent to a clay machinery concern for testing and the results were reported to be good. The products that have been made up and on exhibition at one of the company's offices are, rough texture, hollow and glazed brick, and a backing-up tile and flue lining. W. R. Glasscock, manager of the new company, states that after they have started operation, their capacity will be about 40,000 brick daily and a working force of about 100 men will be maintained for a time. $75,000 will be invested in the first construction work.

ADVANCE BRICK CO. INCORPORATES

The Advance Brick Co., Omaha, Neb., has been incorporated with a capital stock of $25,000, by Joseph Buckley, S. M. Buckley and R. W. Besley, a report states.

BANK SELLS TABLE ROCK COMPANY

The David City Bank has sold the plant of the Table Rock (Neb.) Brick & Material Co., recently purchased at sheriff's sale, to a company headed by T. W. Holland of Lincoln. The plant will be operated as soon as possible.

AURORA BRICK WORKS STOPS

Lack of building activity has caused the Aurora Brick Works near Ravenna, Neb., to shut down for the season. A considerable part of the output had been going into stock and gradually a stock pile of 1,250,000 brick was piled up.

LABORER FINED IN STRIKE WAR

Vice Chancellor Malcolm Buchanan, in the Chancery Court at Trenton, N. J., imposed a fine of $100 and costs for contempt upon Joseph Kryenski, one of five men charged with contempt of court in connection with the strike at the Sayre & Fisher Brick Co.'s plant, Sayreville, N. J. It was alleged that Krycnski drove a truck with a placard on its front: "Strike on at Sayre & Fisher Brick Co. Stay away; don't be a scab!" The court held that in the case of the other four there was a "reasonable doubt" of their guilt, and they were acquitted.

SEABOARD SUFFERS FIRE LOSS

Fire destroyed a 250 foot mold shed, containing a large number of wooden molds, and a two-story employes' dwelling at the plant of the Seaboard Refractories Co., Perth Amboy, N. J., on August 17, the loss being estimated at approximately $25,000. The Seaboard Refractories Co.'s office building was damaged. Fire companies were called from Metuchen, Fords, Hopelawn, and Perth Amboy to fight the flames, which raged for about three hours. A spark from a passing locomotive is said to have been the cause. Immediate reconstruction and replacement of the destroyed implements and material are contemplated.

TRY TO CALL OUT NATCO EMPLOYES

Striking employes of the National Fire Proofing Co.'s, Keasbey, N. J., plant marched to the company's Perth Amboy plant on Saturday, July 28, with the object of inducing the workers there to join them in their walk-out. The minimum wage scale in the National Fire Proofing Co.'s plants is $6 per day, and the union officials have so far failed to inform the company's officials of the reason for the strike nor have they submitted any demands. Local police are guarding the plants. Several years ago a strike at the National's plants led to disorders which necessitated the calling out of the militia. Like other plants in the New Jersey pottery districts, the National will not permit the strike to interfere with operations which are being speeded up despite the defection of those who went out.

NEW $500,000 BRICK COMPANY

Incorporation of the Oschwald Brick Works with a capital of $500,000 has been announced. The company is located in Newark, N. J., and Joseph E. Cohn of Newark is mentioned as incorporator.

TO SELL FIRE BRICK PLANT

Announcement has been received recently to the effect that the New Mexico Fire Brick Co. of Santa Fe, New Mex., will be sold at public auction at Gallup August 21. It is reported that no bid will be accepted for less than $21,750. The receiver for the company is John R. McFie.

CONCRETE BRICK PLANT FOR NEW YORK

It is reported that the New York Trap Rock Co. has a large concrete brick plant under construction at its Peekskill limestone quarry, to make use of hitherto waste screenings.

$750,000 COMPANY IN NEW YORK

With a capital of $750,000 the Superior Brick Corporation has been formed in New York City. The following are named as incorporators: S. Schoen, E. E. Brazier, and R. Mazel.

BORDEN INCREASING CAPACITY

The Borden Brick & Tile Co., of Goldsboro, N. C., is carrying out an expansion program this summer entailing an investment of several thousand dollars. An additional unit is being established that will serve to increase the capacity of the plant materially.

BUY HOYTVILLE, OHIO, PLANT

Clatus and Lester Stough of Findlay, Ohio, have bought the Hoytville Brick & Tile plant in Hoytville, Ohio, it is said, and will operate the factory.

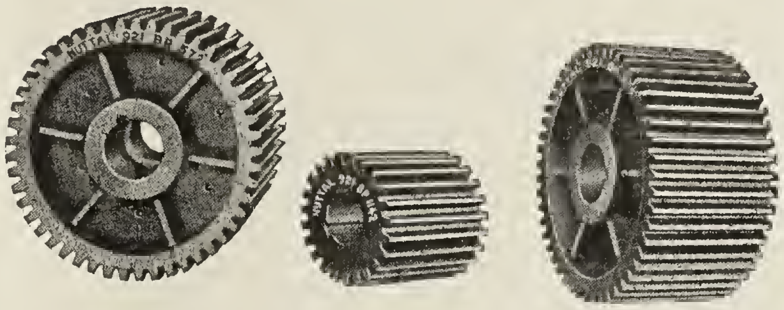
CHARTER VALLEY CITIES BRICK CO.

The Valley Cities Brick Co., of Youngstown, Ohio, has been chartered with a capital of $5,000 to manufacture common brick and other clay products. The incorporators are David G. Jenkins, N. T. Hurd, Harry J. Williams, Howard Zellers and Frank Silver.

HISYLVANIA MAKING PAVERS AT GLOUSTER

The Hisylvania Brick Co., of Columbus, which has two brick plants in the Hocking Valley, one located at Glouster and the other at Trimble, Ohio, has placed the Glouster plant in operation manufacturing pavers. The first brick were produced August 15. The operation is curtailed by

Nuttall Service
to the
Brick & Clay Industry



Nuttall Cut Gears for any application in the Brick and Clay Industry are guaranteed to cost less than cast tooth gears to operate.

Nuttall Heat Treated Gears in any service are guaranteed to cost less than untreated gears because they last three to five times as long.

Nuttall Heat Treating Processes applied to many tools and appliances used in the Industry make them cost less because they make them last longer.

You pay many times for necessary plant betterments in unnecessary high costs if you delay installing them.

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Nuttall

"Proctor" DRYERS

Famous for Economy

"PROCTOR" Dryers prove their wonderful economy in many ways.

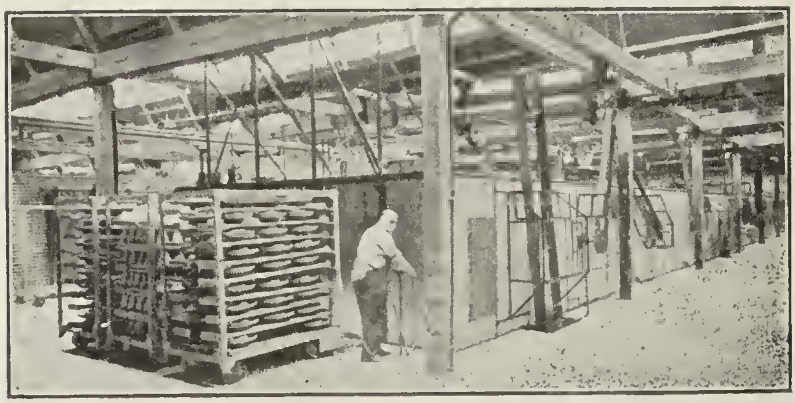
Of outstanding importance is the tremendous saving of time made by these machines wherever they have replaced other methods of drying. Not only have they radically reduced the actual drying-time for all kinds of ceramic wares, but always their systematic operation has accelerated the flow of ware to the kilns and cut down the production schedule.

Invariably the installation of "PROCTOR" Dryers saves a great deal of labor, space and steam over other methods.

Then, too, the perfect quality of "PROCTOR" drying has increased the percentage of first quality ware and decreased the loss from spoiled ware in a substantial measure.

There's a "PROCTOR" Dryer for **your** ware among the various types of these machines we build. Let us make you acquainted.

PROCTOR & SCHWARTZ, INC.
PHILADELPHIA



Tunnel-Truck Humidity Dryer for Electrical Porcelain, Saggers, Chemical Stoneware, Tile Refractories, etc.

breakage in machinery which has stood idle for several years but the necessary repairs have now been made. The plant has a capacity of 50,000 pavers daily. For the time being the other plant will remain idle but it is planned to start operations at that plant some time in the winter.

ASK RECEIVER FOR COLUMBUS CONCERN

Action has been brought in the courts of Hocking County at Logan, Ohio, for the appointment of a receiver for the Columbus Brick & Terra Cotta Co., it is reported, but so far no order has been issued. The action was brought by several stockholders of the company who are said to be dissatisfied with the way things have been conducted.

MAY ENLARGE STATE PLANT

Plans for increasing the output at the state brick plant to meet the demands of various state institutions are under construction. Director Harper of the state welfare department, visited the plant at Junction City, recently, to discuss with the superintendent the feasibility of building more kilns.

POPULARITY OF BRICK

That the popularity of a certain brick may run in waves is illustrated by the resumption of manufacture of the Hytex South Park cherry red smooth brick of the Hydraulic-Press Brick Co., at its South Park (Ohio) plant during August. This material has shown a marked pickup in demand in the last few weeks, and the plant is not only running to capacity on it, but expects to continue that way for the balance of the season.

TO ORGANIZE LABOR IN TUSCARAWAS

What significance or what truth the following clipping from a Uhrichsville, Ohio, paper has is not known, but that it is an indication of the trend of the times cannot be doubted. Brick manufacturers in the district affected will do well to be on the alert. The clipping says: "An organizer who accompanied Thomas Hudson, of Chicago, a speaker for the United Brick & Clay Workers' Organization, will remain here to attempt to organize the 600 clay miners of Tuscarawas County, it was stated."

NEW OHIO COMPANY

Organization of a company to make use of extensive shale deposits at Orangeville, near Warren, Ohio, was made known recently with the announcement of the formation of the Orangeville Brick & Clay Products Co. Plans for the erection of a plant at Orangeville are being rushed. Erection of this plant will mark the culmination of numerous efforts to interest capital in the development of a brick manufacturing plant to make use of the Orangeville shale deposits. Warren, Youngstown, Niles and Sharon capital is interested in the venture. J. E. Mecusker, of Cumberland, Md., is head of the new company.

FORGET BUSINESS CARES AT PICNIC

The largest single event in which building supply dealers have taken part in a long time was the joint picnic of the Supply Dealers Board of Cleveland, held at Madison Grove, Lakelands, Ohio, last week. More than 200 persons attended, according to an estimate by secretary-treasurer Leo A. Krueger, these including the members, their families, and the families of some of their employes. The day was set aside as Supply Dealers Day, and little but the most urgent business was done by the different yards. Practically all of Cleveland's important building supply dealers and many of the brick manufacturers in the city were present at this picnic. A baseball game, races and other events, including a basket luncheon supplied by Mrs. Leo A. Krueger, Mrs.

A. O. Preyer, Mrs. A. L. Goldman, Mrs. Frank Aulenbacher and Mrs. A. B. Stewart, featured the day.

INSTALLS OIL BURNING SYSTEM

The large brick plant of Forest Grove, Ore., has installed an oil burning system to take the place of wood. This change has been made in the interests of time and economy. The company has erected a big concrete tank to hold two car loads of oil.

HAZELTON MAKES MANY BRICK

Big production is being maintained at the plant of the Hazleton (Pa.) Brick Co. this season. The building boom in that section is responsible for the heavy production. The company is turning out approximately a million brick every month.

GENERAL REFRACTORIES EARNS $774,921

Net earnings of the General Refractories Co., head office at Philadelphia, Pa., for the six months ending June 30 was $774,921, a report states. Operations covered in the report include the four months' production prior to the acquisition by the General of the properties of the American Refractories Co. In the report it is stated the company is booked to capacity for the balance of the year.

SAXTON MAKING PLANT IMPROVEMENTS

The Saxton (Pa.) Shale Brick & Tile Co. is now making some very extensive improvements at its plant at Saxton, Bedford County, Pa. An automatic brick cutter, grinding pan conveyor feeders, a waste elevator and several other improvements are being installed. Remodelling work is going on under the direction of Archie Sproul who is a veteran in the clay business. Mr. Sproul expects to have the plant in operation by September 15, turning out 50,000 face brick a day.

CHANCE TO EXHIBIT IN SOUTH CAROLINA

Brick and clay products manufacturers thruout North and South Carolina will, in cooperation with other industries, be among those exhibiting their products at the annual "Made-in-Carolina" Exposition, which is to be held at Charlotte, N. C., September 24 to October 6. This exposition has been an annual affair for some years, and has proven a material aid to the development and expansion of the industries in the two states. Exclusive of textiles, the brick and clay products industries are among the most important in the two Carolinas.

INCORPORATE TEXAS PLANT

The Phoenix Brick & Tile Co., Dallas, Tex., has been incorporated with a capital of $40,000. The incorporators are C. W. Martin, H. E. Spafford and P. S. Russell.

HERE'S PEPPY ADVERTISING

Adams Bros. & Payne, brick manufacturers and dealers, located at Lynchburg, Va., are advertising from the brick angle. This firm presented just about the most attractive display at Lynchburg's First Industrial Exposition, just ended. A front wall of brick was erected, leaving arched doorway and windows, thru which to see the exhibit. The latter consisted of four model houses, complete even to greensward and gravel walks. The brick wall was unique, however, in that it represented four different combinations of brick.

Thousands attended the exposition from Virginia and adjoining states, and few escaped without a souvenir from the Adams Bros. & Payne booth. Once hurled, the souvenir stuck, perhaps in advertisement of the sticking quality of the firm's clay, for it proved to be a sticky cockle burr attached to a colored feather bearing the name of the concern.

GEORGIA CLAYS SUITABLE *for* WHITEWARE

The report of the U. S. Bureau of Mines—"The Use of Sedimentary Kaolins of Georgia in Whiteware," by R. T. Stull and G. A. Bole—concludes:

"The use of Georgia sedimentary kaolins in the whiteware industries is no novelty. They have been used in practically every type of pottery body, both dry press and plastic, where a china clay is required. The more desirable Georgia clays cast as rapidly as do the English china clays, and the proper blending of the clays together with judicious body mixes will render the Georgia clays much more available for whiteware purposes.

"As indicated by tests made in two commercial plants, washed Georgia clays can be used to advantage to displace all the English china clay in a vitrified dry press body of small size, such as floor tile, and less than half the china clay in plastic bodies.

"Bleininger states that the slight variation from white shown by these clays may be corrected by the use of cobalt stain. The color of the ware made from a properly washed clay is about equal to the usual grade of china clay and is only slightly inferior to the highest grade of English clay and domestic primary kaolins."

Reprints of this and other reports on Georgia clays mailed on application.

J. M. MALLORY
General Industrial Agent
CENTRAL *of* GEORGIA
RAILWAY COMPANY
233 West Broad Street
SAVANNAH, GA.

Black 4th Vein **Betty**

TRADE MARK REGISTERED UNITED STATES PATENT OFFICE

The "real coal" for
clay burning and
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Low in Ashes
Low in Sulphur
High in Heat Units

Prepared with latest improved

Shaker Screens
Loading Booms
Picking Tables

*Mines Located at Clinton, Indiana,
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Zimmerman Coal Company
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Terre Haute, Indiana

In the parade put on by the "Bagmen from Bagdad," otherwise the United Travelers, Adams Bros. & Payne was represented by a huge brick that mingled, peaceably, however, with the crowd as it strode down Main Street. As an every day reminder of its prowess in the brick field this firm uses a coupe of which the body represents an attractive brick dwelling.

Brick Display at Lynchburg, Va., Industrial Exposition

POTOMAC ELECTS OFFICERS

Officers were elected at the recent annual meeting of the stockholders of the Potomac Fire Brick Co., Piedmont, W. Va. They are as follows: President, John A. Caldwell; vice-president, W. S. Smallwood; secretary and treasurer, John P. Miller; manager, W. F. Caldwell, and assistant secretary, H. M. Allen.

MONTREAL HAS NEW COMPANY

Duntile Co., Ltd., Montreal, Que., has been incorporated with a capital of $150,000 to manufacture brick; drain tile and sewer pipe.

MAKE INTERESTING TEST ON SEWER BLOCK

The Dominion Sewer Pipe & Clay Industries, Ltd., Swansea, Ont., recently carried out an interesting test on a section of six foot diameter sewer built of Ferguson segment block at Swansea, Ont. Arrangements for the test were made under the supervision of A. G. Dalzell, consulting engineer of the company and the test was conducted by C. A. Hughes, M. Sc., of the Department of Applied Mechanics and Civil Engineering, University of Toronto.

The following are the particulars of the sewer under test: Length of section, six feet ten inches (irregular ends); internal diameter, six feet; external diameter, seven feet 2½ inches; ring thickness, 7¼ inches; number of blocks to circle, 24. Dimensions of outer block, width, 9 5/16 inches; thickness, 6 inches; length, 18 inches; weight 49½ pounds. Dimensions of inner lining, width, 9¼ inches; thickness, one inch; length, 18 inches; weight, 17½ pounds.

Total weight of complete ring, approximately 1,056 pounds. Mortar, one part of portland cement with about ten per cent. of hydrated lime added and three parts of sand. Foundation —in sandy loam; upper half of section constructed above ground. Date of construction—May 3 and 4, 1923. Loading commenced May 22, 1923.

On May 22 under no load the sewer showed the original measurement. On May 26 the total load was 32,000 pounds. On May 28 the load was increased to 50,000 pounds. At this point there was only a slight fracture in one of the webs. Between June 2 and 7 rain fell to the extent of 2.33 inches, softening the foundation and increasing the load greatly by an unknown quantity by saturation.

During the week of June 11 the load was increased to 63,000 pounds, or over 2,500 pounds per square inch. On June 19 the load was increased to 75,000 pounds, or 3,000 pounds per square inch.

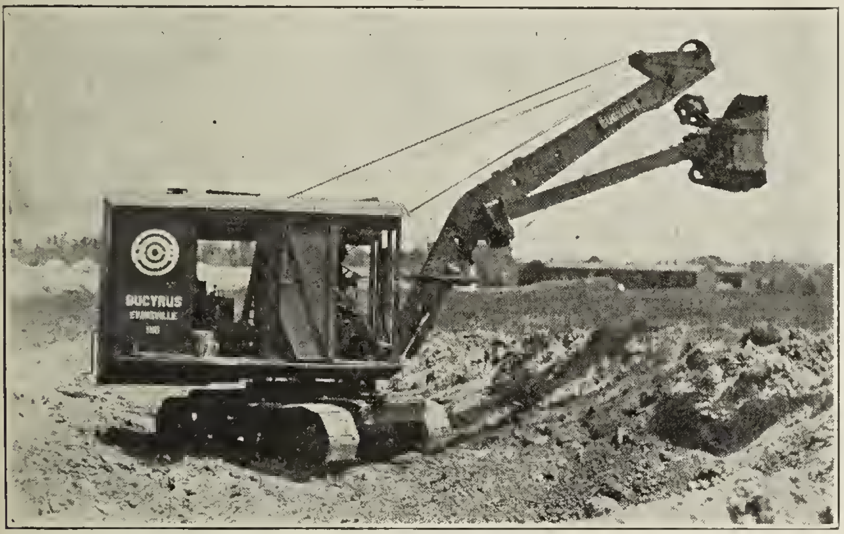
Among Our Advertisers

Details Concerning New Models, Changes in Personel, News Matters, etc., That Our Advertisers Believe Will Interest Our Readers

A NEW ¾-YARD GASOLINE SHOVEL

A new ¾-yard gasoline rope-thrust revolving shovel, known as the 20-B, has just been announced by the Bucyrus Company, South Milwaukee, Wis. This shovel contains the same unique features which are embodied in their 30-B gasoline machine which has been on the market for the past year.

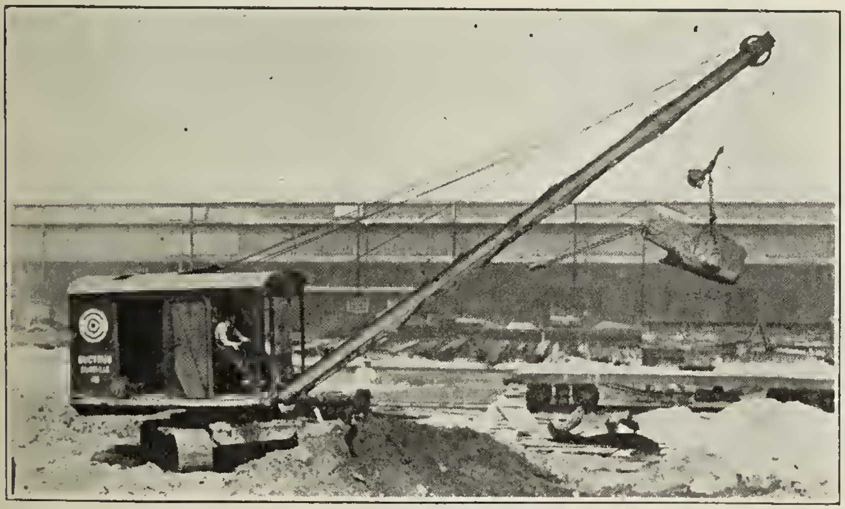
Like the 30-B, the feature which makes this machine unique among shovels of this type is the ingenious rope-thrust arrangement, patents on which are held by the Bucyrus Company, which not only does away with the necessity of engines, gears, clutches, chains or complicated shafting on the boom, but at the same time gives this shovel a drive behind the thrust more powerful than it is possible to obtain with a steam shovel of the same size, since the whole power of the main engine is behind it.



Bucyrus 20B Gasoline Shovel ¾-Yard Dipper

This device has proved itself on the 30-B shovel under the toughest digging conditions in all parts of the world, and its manufacturers believe that it has literally created in itself a new era for the small shovel, driven by an internal combustion engine.

Briefly stated, the shovel is driven by a single, rugged slow-speed gasoline engine. The motions of the dipper handle are controlled by a small drum on a shaft under the boom, which shaft has keyed to it pinions for engaging with the racks on the handle. The drum is turned either way by two ropes wound around this drum in opposite directions, both ropes leading to drums in the main machinery.



Bucyrus 20B Gasoline Dragline Excavator

The striking fact about the performance of this shovel is the ease with which the operator can control the motions of the dipper, even to shake it to relieve it of sticky material. This shovel may also be had with high lift or extra high lift

(AMSCO)

ELIMINATE BREAKAGE
MINIMIZE WEAR

with

"AMSCO"
MANGANESE
STEEL

The severe service required of steam shovels demands that vital parts be made of the staunchest material possible. Manganese steel MISSABE DIPPERS, by a decade of service, have proved themselves the toughest dippers known.

Specify AMSCO MANGANESE STEEL for the following parts and decrease plant upkeep costs:

SCREEN PLATES for DRY PANS
TIRES or RIMS for DRY and WET PANS
TREAD or MULLER PLATES
PUG MILL KNIVES
CHAIN SPROCKETS and ELEVATOR BUCKETS
GEARS and PINIONS

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General Offices: 393 E. 14th St., Chicago Heights, Ill.
Foundries
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The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men—in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Belt Conveyors and Belt Elevators	$5.00
Bricklaying in Modern Practice	1.20
Bricklaying System	4.00
Building Construction and Superintendence, Part. I, Masons' Work	7.00
Burning Clay Wares	7.50
Ceramic Industries (A Treatise on) E. Bourry	6.00
Clay Plant Construction and Operation	4.00
Clay Products Cyclopedia	3.00
Clayworkers' Handbook	6.50
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Engines and Boilers	1.50
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Finding and Stopping Waste in Modern Boiler Rooms, Vol. 2	1.00
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booms, or with dragline, clamshell excavator or crane attachments.

The control is exceedingly simple, and the machinery arranged with convenience of the operator in mind. Whatever clutches are necessary are sufficiently large to obviate the danger of burning. The caterpillars and frame in general are the same as the 20-B steam machine, which is well known for its usual strength and ruggedness.

An illustrated bulletin describing this new machine may be obtained by writing the Bucyrus Company, South Milwaukee, Wisconsin, and asking for Bulletin F-201-B.

* * *

DIE MAKERS MAKE CHANGE

Charlie Snyder, for many years in the clay machinery department of the Louisville Machine Co., is now superintendent of the Lincoln Machine Co., at Minerva, Ohio.

Charlie says he expects to give personal attention to every job that comes in the shop. The company manufactures conveyors, elevators and tables as well as specializing in dies of every shape and size.

A roller bearing, hand-cutting, fireproofing table has just been designed. The table is all metal and full three-block size. It will cost very little more than the ordinary non-roller bearing table, and can be made any length desired.

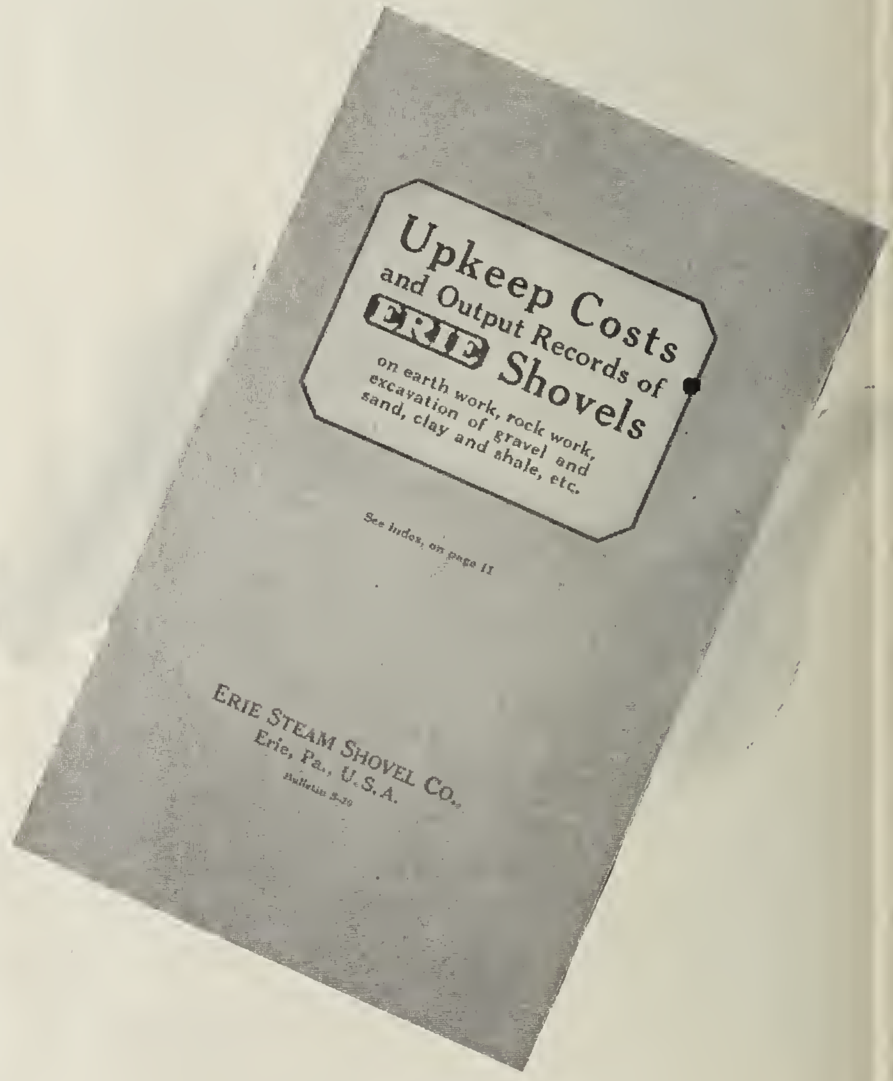
* * *

UNIQUE RECORDS FOR DIGGING

An unusual book has just been issued by the Erie Steam Shovel Company of Erie, Pennsylvania. This book consists of 72 pages and is taken up entirely by the results of a contest which they recently ran on the upkeep cost of Erie shovels under various conditions.

In the contest, they obtained records from 300 concerns, and of these 300, records of 48 are reproduced in this book. Clay products manufacturers will be very much interested in this book because several records are made from actual operating conditions in the industry. They will also be interested in the fact that the book divides up the reports under several headings, according to the work handled. The highest upkeep cost was in the class handling 73% of rock, and here the total upkeep per shovel, including consumed parts, plus actual repairs, was less than ¼ of 1c per cubic yard. Clay costs are lower than this.

Copies of this interesting book can be obtained from the Erie Steam Shovel Company.



Upkeep Costs and Output Records of ERIE Shovels on earth work, rock work, excavation of gravel and sand, clay and shale, etc.

See Index, on page 11

ERIE STEAM SHOVEL CO., Erie, Pa., U.S.A.

Cover of Unique Steam Shovel Record Book

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

What the Statistics Tell

THERE ARE but few matters that come before the men of the clay products industry that have greater importance than statistics on production. The Bureau of Census, Department of Commerce, has just made public 1922 figures on clay products production and value. These figures, which are published on another page in this issue, form the industry's annual balance sheet. They are its health chart and should be scrutinized for symptoms of progress or relapse.

Study Statistics Carefully

A review of figures on production and value is as important to each individual in the industry, as a health report would be to every cell in the human body. Successful plant executives will be studying these figures eagerly.

A great deal can be said in analyzing the figures for 1922. Space will not permit us to go into the subject as fully as we would like, but it is gratifying to note that production increased in most lines. Face brick, terra cotta, sewer pipe deserve honorable mention for their splendid gains, while paving brick and drain tile particularly have scored heavy losses.

Influence of Associations

It will be noticed that all of the major products in the clay industry, with the exception of one, are represented by national trade associations. Drain tile, which made the poorest showing of all branches of the industry, has as yet no national association.

The influence of the various activities of the national associations is clearly reflected in the figures for their respective industry. Where the association was consistently active in its various phases of operation its industry benefited accordingly.

Splendid Record for Face Brick

One cannot avoid commenting on the splendid record of face brick, whose 1922 figures exceed by 40 per cent. in production and by 140 per cent. in value the figures of the next highest year which was in 1916. It must be remembered, however, that 1916 followed the depression of 1914 and 1915; altho production was large it was generally known that there was little money made because of the low prices for which brick were sold which was reflected in the low valuation in 1916. The figures clearly demonstrate that it is not spasmodic advertising, but steady, persistent advertising that brings results. The American Face Brick Association has consistently promoted the use of face brick. Moreover these figures show the value of other association activities such as uniform cost finding, interchanging of ideas, and so forth. Furthermore, an important factor in the increase in output of face brick is the fact that the dealer market has been more fully appreciated and more retailers of face brick are now stocking this commodity than heretofore. This field has been developed but slightly thus far and is a field of promise to the face brick man.

Drain Tile in Bad Way

Drain tile is almost an antithesis of face brick. Steadily and rapidly this industry has declined. It is an industry composed of smaller plants and heretofore has attracted less men of the big business type. The weeding out of inefficient plants and the combination of factories into large companies would undoubtedly be a boon to this industry. Especially would this be true if these large companies could attract bigger men, who would see the value of organizing into a trade association to promote the products of their manufacture.

In the past, the drain tile industry has relied almost solely upon the agricultural market for the disposing of its output. What happened to the agricultural market is well known.

Markets for Drain Tile

This condition might have been alleviated. As has been pointed out from time to time in Brick and Clay Record, during the past seven years a drain tile association has long been desired. There is great need for promoting the use of drain tile in other fields than agriculture. Nearly all road material men appreciate the value of road drainage. A drained road is a better road. But drain tile manufacturers have done little, if anything, to tell this to engineers, public officials and the public.

There are thousands of golf courses existing thruout the United States, and golf is becoming increasingly popular. The automobile has encouraged the promotion of country clubs. Most men can take advantage only of a few leisure days to play golf. Hence the course that is always in good condition is requisite. Tile drainage has proven its worth on golf courses, yet the world does not know about it.

Double Drain Tile Markets

Each year there are thousands of dwellings of the more expensive type built on large ground areas. A large sum of money is spent on the home but the surrounding lawn, hedge, shrubbery, and so forth, which give the home its atmosphere, is not given the advantage of proper drainage. If tiled, the cost of maintenance of an estate would be less and the appearance greatly enhanced. Here's a field the drain tile men have hardly scratched. It is awaiting the promotional activities of an association backed up by red blooded drain tile men with vision. The present market in drain tile can be doubled if the proper efforts are forthcoming. From a glance at the curve showing the production figures for drain tile, it is apparent that it is either a case of the drain tile men doing something along these lines or closing their plants to realize what money there is in the property and junk value of the plant.

Common Brick Coming Back

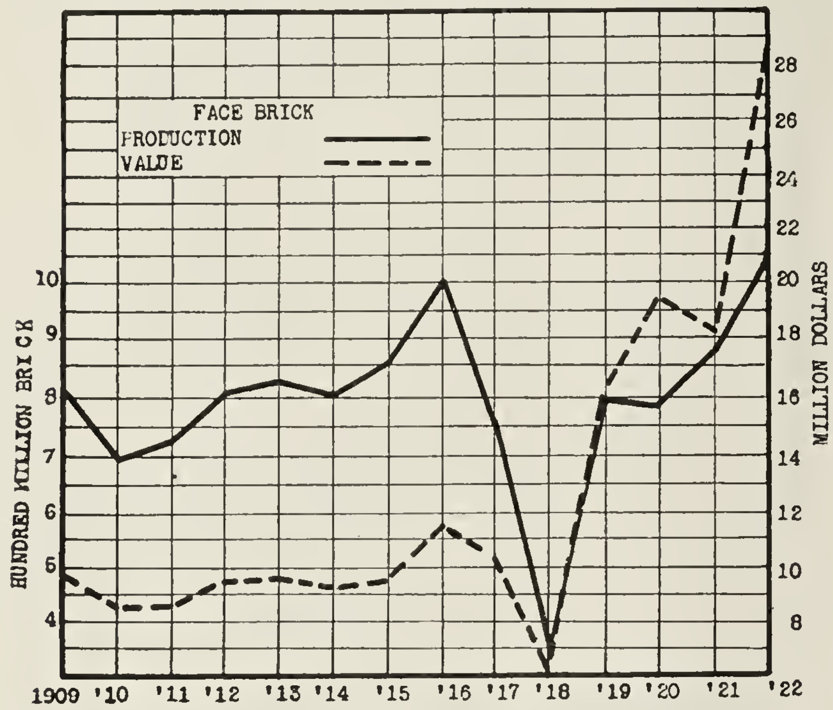
Space will not permit discussing each product, but we can hardly pass up the common brick figures without some comment. The curve of common brick production is on the upswing. Common brick, like drain tile, up to 1918 was steadily losing ground. An association was formed in 1918 and there can be no doubt that this move was in a large measure responsible for turning the direction of the production curve upward.

An analysis of the production figures proves to our own minds that an association conducted along proper lines, whole-heartedly supported and persistently as well as consistently working along lines of constructive promotion, is the salvation of any branch of the clay products industry.

Clay Products Again Hitting Stride

Value of 1922 Products Exceeded Only in 1920—Face Brick Reaches Highest Mark in History—Common Brick Makes Big Gains—Drain Tile in Dumps

THE VALUE of brick, tile, terra cotta, fire clay products, pottery and non-clay refractories produced in the United States in 1922 amounted to $335,518,035. This is an increase of over $57,000,000 over the 1921 figure. It does not exceed the record amount, however, which was produced in 1921 and valued at $388,746,923. While the 1921 value is greater the actual tonnage production is less than in 1922, the difference in value being made up by the higher prices received for clay products in 1920. The 1919 production, which established a high mark at that time, was valued at $286,261,276.



Read Production Curve from Left—Value Curve from Right

FACE BRICK

Year	Production (thousands)	Value	Price
1922	1,407,853	$28,537,504	$20.27
1921	873,346	18,128,217	20.76
1920	786,614	19,440,968	24.71
1919	791,068	16,033,059	20.27
1918	356,394	6,095,120	17.10
1917	757,618	10,391,368	13.72
1916	1,002,762	11,464,614	11.43
1915	855,668	9,535,536	11.14
1914	810,395	9,289,623	11.46
1913	827,665	9,614,138	11.62
1912	814,007	9,455,297	11.62
1911	729,911	8,648,877	11.93
1910	697,857	8,590,057	12.31
1909	816,164	9,712,219	11.90

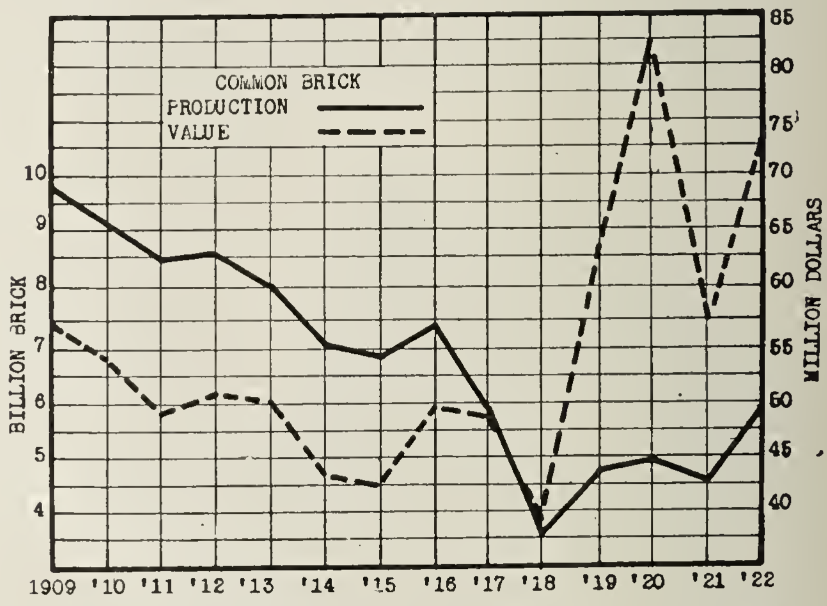
For the brick, tile, terra cotta and fire clay products, the value of products reported for 1922 was $229,435,610, which was an increase of 23 per cent. over 1921 and 16.2 per cent. over 1919, but a decrease of 14.1 per cent. in 1920.

Pottery Value Gains

For the pottery industry the value of products in 1922 was $91,986,297, which was an increase of 9.3 per cent. over 1921 and 18.1 per cent. over 1919 but a decrease of 13.8 per cent. compared with 1920.

The figures here covered, as well as those in the table, have been compiled by the Department of Commerce. The report for 1922 involved 1,973 establishments, including 1,661 primarily engaged in the manufacture of brick, tile, terra cotta and fire clay products, 270 primarily engaged in the manufacture of pottery, and 52 in the manufacture of non-clay refractories. Of the 1,973 establishments reporting in 1922, 331 were located in Ohio; 302 in Pennsylvania; 119 in Illinois; 116 in New Jersey; 101 in New York; 91 in Indiana; 62 in California; 56 in Missouri; 56 in North Carolina; 55 in Iowa; 47 in Texas; 45 in West Virginia; 35 in Kentucky; 34 in Virginia; 33 in Massachusetts; 31 in Alabama; 30 in Tennessee; and the remaining 429 establishments were distributed thru 31 other states.

While practically every important clay product showed an increase in the total tonnage production in 1922 over the previous year, practically all the various clay products with the exception of face brick and pottery have still a long uphill journey to get back to the point of high production. While much of the 1922 increase must be attributed to the enormous amount of building done in that year, still one cannot help but feel that the great amount of publicity which certain clay products have enjoyed, especially face brick and common brick, has been in a large measure responsible for the increased use of these products. The products showing the most startling increase in both production and value in 1922 over the previous year are face brick, common brick, fire brick and sewer pipe, in the order named. Hollow building tile showed an increase in production over the previous year, but did not nearly regain the production it had lost during the year of 1921.



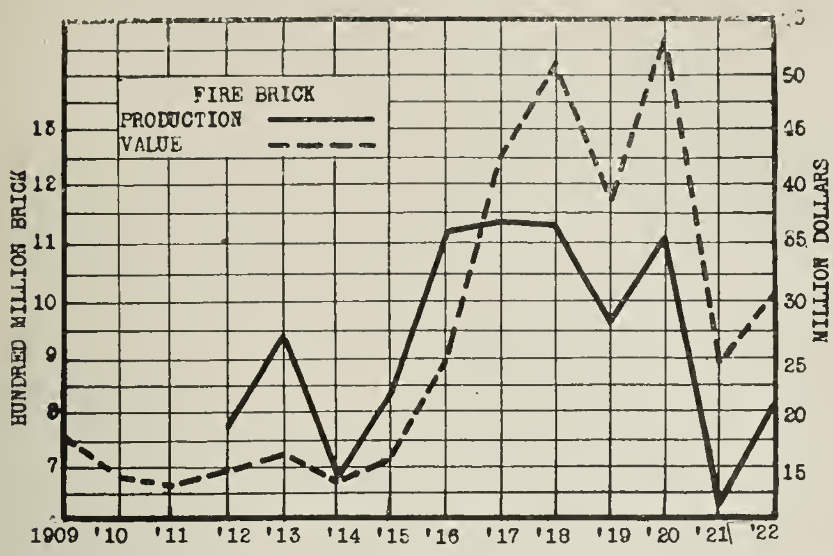
Read Production Curve from Left—Value Curve from Right

COMMON BRICK

Year	Production (thousands)	Value	Price
1922	5,895,615	$72,713,640	$12.33
1921	4,547,942	57,096,178	12.55
1920	4,851,126	82,216,230	16.95
1919	4,751,891	63,584,748	13.38
1918	3,556,519	38,782,458	10.90
1917	5,864,909	47,936,344	8.17
1916	7,394,202	49,357,411	6.68
1915	6,851,099	42,145,292	6.15
1914	7,146,571	43,769,524	6.12
1913	8,088,790	50,134,757	6.20
1912	8,555,238	51,796,266	6.05
1911	8,475,277	49,885,262	5.89
1910	9,221,517	55,219,551	5.99
1909	9,791,870	57,251,115	5.85

Structural Clay Products Lead

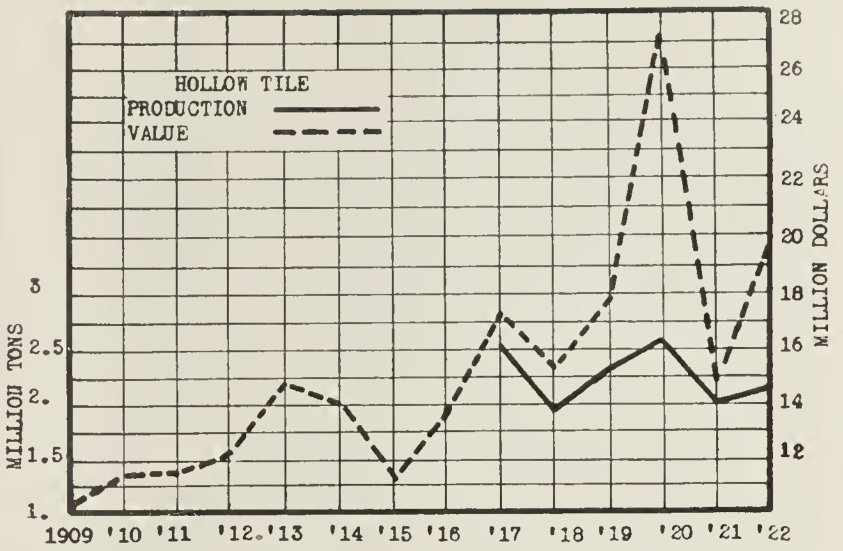
The order of importance of the different classes of clay produced in 1922 is as follows: Structural clay products



Read Production Curve from Left—Value Curve from Right

FIRE BRICK

Year	Production (thousands)	Value	Price
1922	807,753	$30,411,043	$37.65
1921	621,009	24,833,297	40.00
1920	1,114,809	53,415,888	47.91
1919	963,439	38,015,792	39,46
1918	1,222,352	51,647,639	42,25
1917	1,304,286	42,501,669	32.59
1916	1,166,592	24,436,873	20.94
1915	833,739	15,800,069	18.94
1914	687,091	13,476,022	21.07
1913	943,053	16,211,316	17.19
1912	778,103	14,954,455	19.21
1911	....	13,553,870	....
1910	....	14,822,446	....
1909	....	16,620,695	....



Read Production Curve from Left—Value Curve from Right

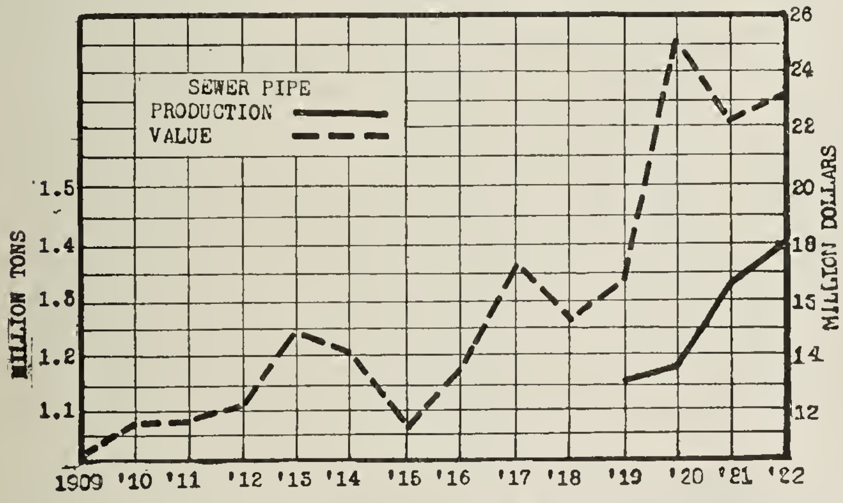
HOLLOW TILE

Year	Production (Tons)	Value	Price
1922	2,176,366	$19,701,214	$ 9.05
1921	2,013,843	14,840,870	7.03
1920	2,599,128	27,312,007	10.62
1919	2,329,217	17,964,573	7.71
1918	1,953,392	15,333,673	7.84
1917	2,590,028	17,307,211	6.68
1916	....	13,577,006	....
1915	....	11,259,349	....
1914	....	14,014,767	....
1913	....	14,872,103	....
1912	....	12,147,677	....
1911	....	11,454,616	....
1910	....	11,428,696	....
1909	....	10,322,324	....

as a whole, including all types of clay products in the accompanying table which are utilized in construction purposes, make up 45 per cent. of the total value of all products; the value of pottery products is 27 per cent. of the total; engineering products (vitrified brick, sewer pipe and drain tile) make up 11 per cent. of the total; clay fire brick and refractories make up nine per cent. of the total; non-clay refractories make up four per cent. of the total.

Common Brick Makes Big Gains

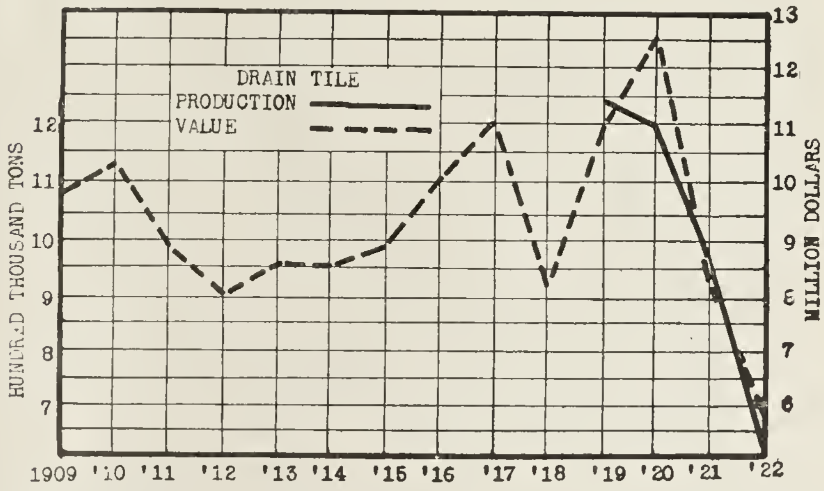
Common brick is again away out in front in point of value and production, having left its nearest rival, fire brick, far behind. The total value of common brick produced in 1922 was $72,713,640, which is an increase of approximately 27 per cent. over the 1921 value. Actual production also showed a great increase, 1,347,673,000 more common brick being produced in 1922 than in 1921. The curve of common brick production shows a remarkable rise in 1922. This is good news to the common brick manufacturer and may be attributed in a large measure to the activities of the Common Brick Manufacturers Association in fighting substitute materials thru the medium of advertising and publicity. A glance at the accompanying chart will show that the curve of common brick production has been going steadily upward since the war



Read Production Curve from Left—Value Curve from Right

SEWER PIPE

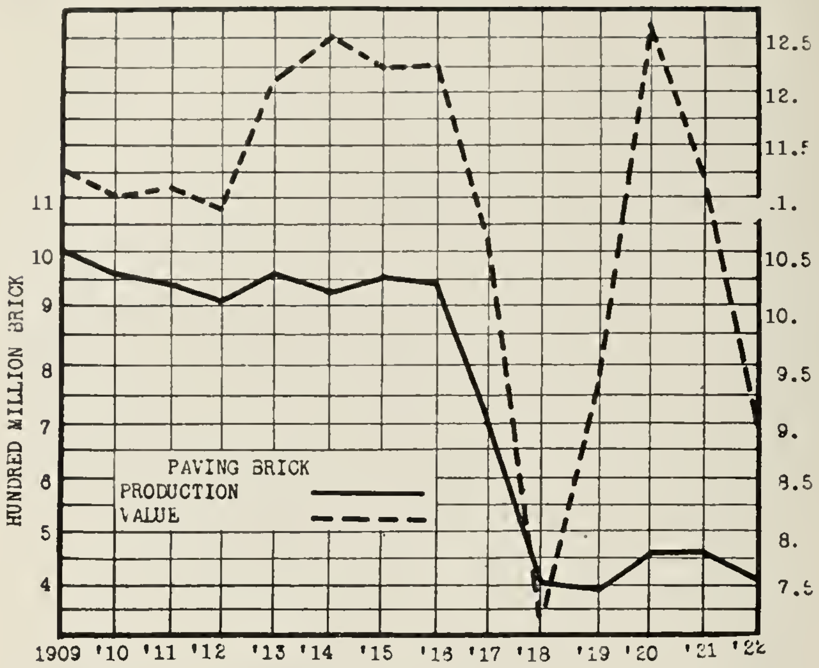
Year	Production (Tons)	Value	Price
1922	1,402,482	$23,151,900	$16.50
1921	1,356,265	22,155,442	16.34
1920	1,179,378	25,171,015	21.34
1919	1,155,131	16,754,832	14.50
1918	....	15,333,673	....
1917	....	17,307,211	....
1916	....	13,577,006	....
1915	....	11,259,349	....
1914	....	14,014,767	....
1913	....	14,872,103	....
1912	....	12,147,677	....
1911	....	11,454,616	....
1910	....	11,428,696	....
1909	....	10,322,324	....



Read Production Curve from Left—Value Curve from Right

DRAIN TILE

Year	Production (tons)	Value	Price
1922	608,211	$ 5,585,700	$ 9.18
1921	969,968	8,364,300	8.62
1920	1,191,290	12,524,641	10.51
1919	1,241,168	10,945,943	8.82
1918	....	8,196,199	....
1917	....	11,008,163	....
1916	....	10,083,647	....
1915	....	8,879,264	....
1914	....	8,522,039	....
1913	....	8,558,320	....
1912	....	8,010,250	....
1911	....	8,826,314	....
1910	....	10,389,822	....
1909	....	9,799,158	....



Read Production Curve from Left—Value Curve from Right

PAVING BRICK

Year	Production (thousands)	Value	Price
1922	410,633	$ 8,967,273	$21.84
1921	468,945	11,201,409	23.89
1920	468,494	12,678,557	27.06
1919	392,526	9,371,763	23.88
1918	402,816	7,145,359	17.74
1917	706,934	10,664,560	15.09
1916	941,553	12,236,890	13.00
1915	953,335	12,230,899	12.83
1914	931,324	12,500,866	13.42
1913	958,680	12,138,221	12.66
1912	911,869	10,921,575	11.98
1911	948,758	11,115,742	11.72
1910	968,000	11,004,666	11.37
1909	1,023,654	11,269,586	11.01

year of 1918, with the exception of 1921, which was the year of general business depression. There is every indication that with the gradually increasing appreciation on the part of the public of the economy and good business sense of building with fire resisting materials, common brick will rapidly rise to the higher levels of production reached in 1909 and previous years.

The average price of common brick dropped from $12.55 in 1921 to $12.33 in 1922. This drop came despite the enormously increased use of common brick in that year.

Face Brick Exceeds All Records

Face brick showed the most remarkable increase of any product on the entire list, the manufacturers of this product turning out 61 per cent. more face brick in 1922 than in 1921. The total value of face brick produced was $28,537,504, almost $10,000,000 more than in the previous year. The face brick curve for both production and value stands at a higher level in 1922 than at any time in the entire history of the face brick industry. 1922 production exceeded the previous peak, which was reached in 1916, by 40 per cent. Despite the enormous demand for face brick the price of this product remained practically the same. Average price for 1922 stood at $20.27 as against $20.76 for 1921. Much of the tremendous success of face brick in the last year must be attributed to the reaction on the part of the public to the splendid advertising and publicity work carried on by the American Face Brick Association. Face brick apparently is growing more popular despite the advent of numerous other materials designed to take its place, especially in home building.

Gains in Fire Brick Production

Fire brick in 1922 retrieved some of the production losses sustained in 1921 and comes into second place in point of value of product with a total of 807,753,000 brick produced, valued at $30,411,043. This production compared with 621,009,000 brick in 1921, valued at $24,833,297. The value of fire brick in 1922 did not rise in the same proportion as the production due to a drop in the average price from $40 to $37.65. A glance at the curve showing production and value of fire brick will show that this commodity has a hard climb ahead to reach the high peak attained in 1916, '17 and '18, the war years. However, production was abnormal in those years and one may say that present production has fallen below the mark established in 1922 only three times.

Sewer Pipe at Highest Production

Next in line in point of value is sewer pipe, with a total of $23,151,902. This is slight increase over the previous year and has only once been exceeded in the history of the industry, and that was in 1920 when the products were valued at $25,171,015. Production of sewer pipe in 1922 reached the highest total ever recorded, a total of 1,402,482 tons being reported. This exceeds the year 1920 in which the total value of sewer pipe produced exceeded that of the total value of the 1922 output, by 19 per cent. The difference in total value between the two years is due to a drop of $4.84 in the average ton price in 1922. The sewer pipe production curve is unique in that

Clay and Refractory Products: 1922, 1921, 1920 and 1919

Brick, Tile, Terra-Cotta, Fire-Clay Products, Pottery, and Non-Clay Refractories

	1922	1921	1920 (1)	1919
Total value	**$335,518,035**	**$278,492,385**	**$388,746,923**	**$286,261,276**
Brick and tile products..........	**$229,435,610**	**$186,589,507**	**$266,953,426**	
Common brick, thousands.......	5,895,615	4,547,942	4,851,126	4,751,891
Value	$72,713,640	$57,096,178	$82,216,230	$63,584,748
Average, unit value, M........	$12.33	$12.55	$16.95	$13.38
Vitrified brick or block—				
For paving, thousands.........	410,633	468,945	468,494	392,526
Value	$8,967,273	$11,201,409	$12,678,557	$9,371,763
Average unit value, M........	$21.84	$23.89	$27.06	$23.88
Other vitrified brick or block, thousands	75,820	93,001		96,716
Value	$1,277,998	$1,668,756		$2,243,381
Average unit value, M.........	$16.86	$17.94		$23.20
Face brick, thousands...........	1,407,853	873,346	786,614	791,068
Value	$28,537,504	$18,128,217	$19,440,968	$16,033,059
Average unit value, M.........	$20.27	$20.76	$24.71	$20.27
Fancy or ornamental brick, thousands	15,964	1,996	1,017	2,198
Value	$396,493	$79,762	$71,081	$77,879
Average unit value, M.........	$24.84	$39.96	$69.89	$35.43
Enameled brick, thousands......	16,458	12,756	11,178	14,166
Value	$1,313,633	$1,207,081	$1,040,323	$846,676
Average unit value, M.........	$79.82	$94.63	$93.07	$59.77
Architectural terra-cotta, net tons	107,224	68,360	77,826	
Value	$12,409,543	$9,068,473	$10,851,902	$3,988,182
Average unit value, ton........	$116.00	$133.00	$139.00	
Hollow building tile:				
(a) Partition, load-bearing, back-up, blocks, furring, book tile, net tons........	1,298,548			
Value	$8,448,967			
Average unit value, ton.......	$6.37			
(b) Floor arch, silo tile, corn crib tile, conduits, radial chimney blocks, fireproofing, net tons.............	877,818	2,013,843	2,599,128	2,329,217
Value	$5,659,912	$14,840,870	$27,312,007	$17,964,573
Average unit value, ton.......	$6.45	$7.03	$10.62	$7.71
Not separately reported (A and B), net tons................	693,029			
Value	$5,593,335			
Average unit value, ton.......	$8.07			
Tile (not drain tile):				
(a) Roofing tile—squares, ...	211,588	131,886	98,361	94,148
Value	$2,823,792	$2,314,067	$1,532,588	$1,283,901
Average unit value, sq. ft.....	$13.35	$17.55	$15.58	$13.12
(b) Floor (plain vitreous, encaustic, quarry, etc.), sq. ft.	5,788,360	7,579,059	8,006,944	7,790,967
Value	$1,832,781	$2,382,481	$2,253,848	$1,535,287
Average unit value, sq. ft.....	$0.32	$0.31	$0.32	$0.20
(c) Ceramic mosaic (vitreous and semi-vitreous)—sq. ft.	16,608,117	10,571,633	10,948,666	7,471,767
Value	$3,951,794	$2,567,648	$3,188,321	$1,824,372
Average unit value, sq. ft.....	$0.24	$0.24	$0.29	$0.24
(d) Faience (including art, enameled, hand decorated), sq. ft.	1,612,226	1,044.615	1,289,621	1,550,121

	1922	1921	1920 (1)	1919
Value	$1,015,436	$902,169	$816,047	$881,241
Average unit value, sq. ft.	$0.63	$0.86	$0.63	$0.57
(e) Wall tile (thin, white glazed, etc.), sq. ft.	16,406,693	10,946,208	10,216,833	7,495,618
Value	$6,972,934	$4,393,166	$4,679,232	$2,612,651
Average unit value, sq. ft.	$0.42	$0.40	$0.46	$0.35
Drain tile, net tons	608,211	969,968	1,191,290	1,241,168
Value	$5,585,700	$8,364,300	$12,524,641	$10,945,943
Average unit value, ton	$9.18	$8.62	$10.51	$8.82
Sewer pipe, net tons	1,402,482	1,356,265	1,179,378	1,155,131
Value	$23,151,900	$22,155,442	$25,171,015	$16,754,832
Average unit value, ton	$16.50	$16.34	$21.34	$14.50
Stove lining, value	$1,224,068	$799,579	$779,710	$683,844
Fire brick:				
Clay brick, block, or tile; boiler, locomotive and tank, etc. (9-in. equivalent), thousands	807,753	621,009	1,114,809	963,439
Value	$30,411,043	$24,833,297	$53,415,888	$38,015,792
Average unit value, M.	$37.65	$40.00	$47.91	$39.46
High alumina brick, over 40 per cent.—thousands	21,438			
Value	$802.479			
Average unit value, M.	$37.43			
Other clay products, including gas retorts, wall coping, flue lining, prepared clay, etc.	$6,345,385	$4,586,612	$8,981,068	$8,840,492
Pottery	**$91,986,297**	**$84,149,029**	**$106,716,676**	**$77,857,762**
Red earthenware	$2,993,185	$2,029,941	$1,766,919	$1,298,311
Red and brown white-lined cooking ware	$1,012,117	$620,835	$715,902	$723,981
Stoneware (except chemical) and yellow and rockingham ware	$4.958,885	$4.920,378	$5,475,660	$4,603,018
Chemical stoneware	$670,941	$607,947	$1,273,511	$805,321
Chemical porcelain	$765,766	$221,396		
Whiteware, C.C., white granite semi-porcelain, and semi-vitreous porcelain	$27,523,461	$29,744,343	$38,323,880	$29,847,261
Porcelain china, bone china, delft, and belleek ware	$1,387,404	$4.262,331	$11,340,093	$7,708,832
Hotel china	$6,965,834	$7,888,191		
Sanitary ware, bathtubs, washtubs etc. (not including fittings)	$24,271,599	$15,302,939	$22,014,651	$14,872,364
Porcelain electrical supplies (not including fittings)	$16,128,913	$14,330,984	$20,218,924	$12,614,794
Saggers	$1,515.785	$1,927,353	$1,666,551	$2,115,637
Other pottery products	$3,792,407	$2.292.391	$3,920,585	$3,268,243
Non-Clay Refractories	**$14,096,128**	**$7,753,849**	**$15,076,821**	**$10,914,898**
Silica brick, thousands	186,547	104.990	250,582	211,420
Value	$7,533,409	$5,220,640	$15,076.821	$10,914,898
Average unit value, M.	$40.38	$49.72	$60.17	$51.63
Magnesia or magnesite brick, thousands	10,569			
Value	$2,629,393			
Carborundum, chrome, and bauxite brick, in the order named	$979,845	$2,533,209	(2)	(2)
Other than brick—of magnesia or magnesite, chrome, carborundum, carbon, silica and alumina, in the order named	$2,690.949			
Refractory cement, net tons	61,454			
Value	$262,532			

(1) Reported by the Geological Survey.
(2) No data.

since 1919 it has steadily gone upward. The average price per ton increased slightly from $16.34 to $16.50.

Hollow Tile Makes Only Slight Gains

Hollow tile in 1922 showed signs of recovery from the depression of 1921. During the year a total of 2,176,366 tons were produced. This is an increase of eight per cent. over the production record in 1921. The average price increased approximately $2 in 1922, sending the valuation curve up at a little sharper angle than the production curve to a total of $19,701,214, value of hollow tile produced in 1922. Hollow tile figures for 1922 are not quite as gratifying as those of either common brick or face brick, the percentage increase in production and value being less than for either of the two mentioned products.

There is not so good a story to tell for paving brick as for any of the previously mentioned products. The value of this commodity in 1922 was $8,967,273. Production reached a total of 410,633,000 brick. The figures for 1922 indicate a decline of 14 per cent. from those of the previous year. The value of paving brick produced in 1922 also decreased and shows a drop of $2,234,126 from the 1921 total. A decline of a little more than $2 in price was partly responsible for the lower figures. The accompanying chart showing paving brick production and value since 1909 should show the paving brick manufacturer that he must get behind his product with advertising and publicity to make up for the tremendously decreased production since 1916.

Big Slump in Drain Tile Production

The value of drain tile produced in 1922 was $5,585,700, which is a decline of 41 per cent. from the 1921 total and 124 per cent. from the 1920 total, which was the highest ever reached. In that year (1920) the average price of drain tile was $10.51, as compared with the 1922 price of $9.18. Production of drain tile was but 608,211 tons as compared with 959,968 tons in 1921 and 1,191,290 in 1920. The figures showing the production and value of drain tile very clearly indicate the need of organizing an association that would boost the sale and use of that product. There is no such organization now in existence in the drain tile industry and as a result this market is not being cultivated as it should be. In considering the drain tile chart one must bear in mind that the farmer has been a poor drain tile customer in the last two years.

Architectural Terra Cotta

Architectural terra cotta made an appreciable gain in 1922 over previous years, both in tonnage and in value of products. The 1922 value was $12,409,543 which compared with $9,068,473 in 1921. Production figures rose to a total of 107,224 tons which was an increase of 38,864 tons over the previous year. The value of terra cotta produced in 1921, which was when prices were high, amounted to $9,068,473.

Among the non-clay refractories silica brick is the leading product with a total value of $7,532,490 in 1922. This figure includes a production of 186,547,000 brick. The production of this material gained approximately 81,000,000 over the 1921 output.

Pottery Production Increases

Production of pottery in 1922 was valued at $91,986,297. This compared with a total of $84,149,029 in 1921. The materials of greatest importance under the heading of pottery are, whiteware and so forth, with a total of $27,923,461; sanitary ware, with a total of $24,271,599, and electrical porcelain with a total of $16,128,913.

* * *

8 HOUR DAY BRINGS NO PRICE CHANGE

Contrary to the expectations of a considerable part of business, the change from the twelve to the eight hour day which has been made at various central western iron and steel plants has had no traceable effect on orders or prices. Buyers show much interest in the regime, particularly in the extent to which men can be had for the third shift because of the lessened demand for steel. This factor cannot be measured today, says Iron Age. This journal says:

"There is a similar lack of definite data on the increase in cost due to the employment of more men for a given output, but where detailed figures have been attempted they indicate that some estimates of the added cost have been high. While the larger companies lead off in abolishing the 12 hour day, a good many of the smaller producers have made no plans. For some time their costs will be unchanged, and this is a competitive factor yet to be measured."

AUGUST BUILDING TOTALS DROP 5 PER CENT.

The decline in construction volume which began in June continued thru August, according to F. W. Dodge Corporation. However, the August drop from July was only five per cent. Total August building contracts in the 36 Eastern States (including about seven-eighths of the total construction volume of the country) amounted to $298,629,000. In the 27 States for which records were kept last year, the drop from August, 1922, was 15 per cent. In these 27 states the construction started during the first eight months of this year has been just equal to the amount for the corresponding period of last year, altho on June 1 this year had a lead of 15 per cent. over last year. This year's construction volume to date in the 36 Eastern States has amounted to $2,723,911,000.

The gradual decline in construction volume since May has taken place in an orderly manner, with a continuation of relatively large building volume. It has also been accompanied by a gradual decline in cost levels.

Last month's record for the 36 states included the following important items: $126,871,000, or 42 per cent, for residential buildings; $62,664,000, or 21 per cent., for public works and utilities; $37,457,000, or 12 per cent., for business buildings; $25,861,000, or 9 per cent., for educational buildings; and $19,359,000, or 6 per cent., for industrial buildings.

Contemplated new work reported in the 36 states last month amounted to $508,484,000, a decline of 20 per cent. from the amount reported in July.

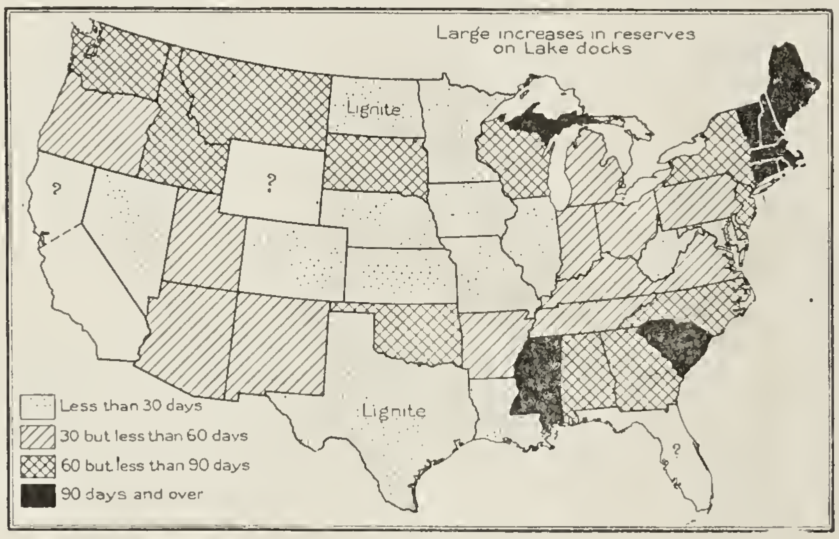
⁂

LITTLE BRICK USED IN FEDERAL-AID ROAD

The relative mileage of the various types of road being built in this country is indicated by figures given by the Bureau of Public Roads of the United States Department of Agriculture. These figures apply only to Federal-aid roads, but since they represent 25,000 miles of road now in use and include roads built in every state, they may be taken as fairly representative of the character of the main highways. The 25,000 miles is divided by types as follows:

	Per cent.
Gravel	39.1
Graded and drained	20.6
Cement concrete	18.3
Sand clay	10.8
Bituminous macadam	4.0
Bituminous concrete	3.1
Water-bound macadam	2.7
Brick	1.4

Complete figures covering all roads constructed and now in use would undoubtedly show somewhat higher percentages of the lower types of road, since the more important roads have been selected for improvement with federal aid.


Large increases in reserves on Lake docks
Lignite
?
?
Lignite
?
▢ Less than 30 days
▨ 30 but less than 60 days
▩ 60 but less than 90 days
■ 90 days and over

Day's Supply of Soft Coal on Hand at Industrial Plants on August 1, 1923. At the Average Rate of Consumption That Prevailed During July, 1923, Reserve Stocks at Industrial Plants Other Than Steel and By-Product Coke Would Last on the Average 54 Days. The Map Shows How the Supply Varied from State to State. Changes in Business Activity Which Affect Coal Consumption Are Quickly Reflected in the Day's Supply. Based on Reports from 2,229 Plants.

⁂

TO DETERMINE NATIONAL WEALTH

Senate Resolution No. 451, dated February 26, 1923, has directed the Federal Trade Commission to make an inquiry into and to compile data concerning the total amount of the chief kinds of wealth in the United States, including land, improvements, movables, and other tangible and intangible goods, and also the ownership thereof and the various liabilities incumbent thereon, including public and private debts of various kinds, corporation stocks, and other choses in action; and to make inquiry into and compile data concerning the amount of annual increase in national wealth in recent years in different lines of economic activity and of the income received by different classes of the population.

⁂

PLAN NEXT YEAR'S PUBLICITY

Drive for next season's paving activities has already started at the headquarters of the National Paving Brick Manufacturers' Association, Cleveland, Ohio. Nearing completion is the preparation of literature that will supplement the advertising campaign of the organization. This material will find its outlet largely thru the field representatives of the territorial associations affiliated with the National and thru the salesmen of the various manufacturer-members. The material has been prepared in such a manner that it will appeal and be understood alike by the layman and the engineer. It is expected to be ready for distribution in a few weeks. It will cover comprehensively the value and outstanding characteristics of brick pavements and their construction.

The brick paving specifications, which have had such a good influence in the last year, are now being revised completely. Extensive as was the first effort along this line, the present revision, when completed, will be more so, since it will contain much of the new development in design and construction, and point the way to the engineer along these lines. With this revision will be produced a book on the construction of vitrified brick pavements, which will include recommended specifications.

ESTIMATED UNITED STATES PRODUCTION OF BITUMINOUS COAL (Net tons)

	Total bituminous, including coal coked			
	1923		1922	
	Week	Calendar year to date	Week	Calendar year to date
August 18	10,843,000	345,690,000	4,609,000	216,823,000
Daily average	1,807,000	1,773,000	768,000	1,109,000
August 25 (a)	11,383,000	357,073,000	6,736,000	223,559,000
Daily average	1,897,000	1,776,000	1,123,000	1,109,000
September 1 (b)	11,633,000	368,706,000	9,359,000	232,918,000
Daily average	1,939,000	1,781,000	1,560,000	1,122,000

(a) Revised since last report. (b) Subject to revision.

Selling Danville to Its 40,000 Citizens*

George A. Olsen

Editorial Staff Brick and Clay Record

***To Get the Most Out of This, Change "Danville" to the Name of YOUR HOME TOWN—Then Go on With the Story**

COMPLETELY SELLING A CITY to its citizens in one month's time is an achievement accomplished by the united efforts of the six building and loan associations and the construction interests of Danville, Ill. The idea was first conceived by one of the association secretaries, who immediately secured the interest of the remaining associations, and in record-breaking time, secured from the contracting, architectural and building supply interests a publicity fund. This fund was used in an advertising campaign which brought into the coffers of the building and loan associations sufficient money to proceed with the granting of loans desired for the erection of homes.

Loan Association Secretary Conceives Idea

Last winter, Danville found itself short of homes and there existed on the part of a large number of its residents a keen desire to commence home building activity with the opening of construction work in the spring. Building and loan associations were approached for loans to erect these habitations, but the demand for money was far in excess of the ability of the six bodies to produce. The idea of interesting contractors, architects, material men and manufacturers in a plan for raising money to aid construction work was conceived by John Webster, secretary of one of the building and loan associations.

United Effort Raises $2,500 Publicity Fund

He secured the interest and approval of the five other building and loan association secretaries to the extent that these organizations decided to contribute funds of their own and to help solicit funds from other interested parties, so as to put on a real drive in behalf of the building and loan association movement. Included as contributors to this drive were the following allied interests: Brick manufacturers, sand and gravel producers, building supply dealers, lumber contractors, painters and decorators, subdivision owners, master plumbers, Danville architects, the Real Estate Board, and the Chamber of Commerce.

As a result of this united effort to raise funds to give general publicity to the building and loan association movement, there was gathered together $2,500, which amount of money was used exclusively for advertising.

Full Page Newspaper Ads Bring Results

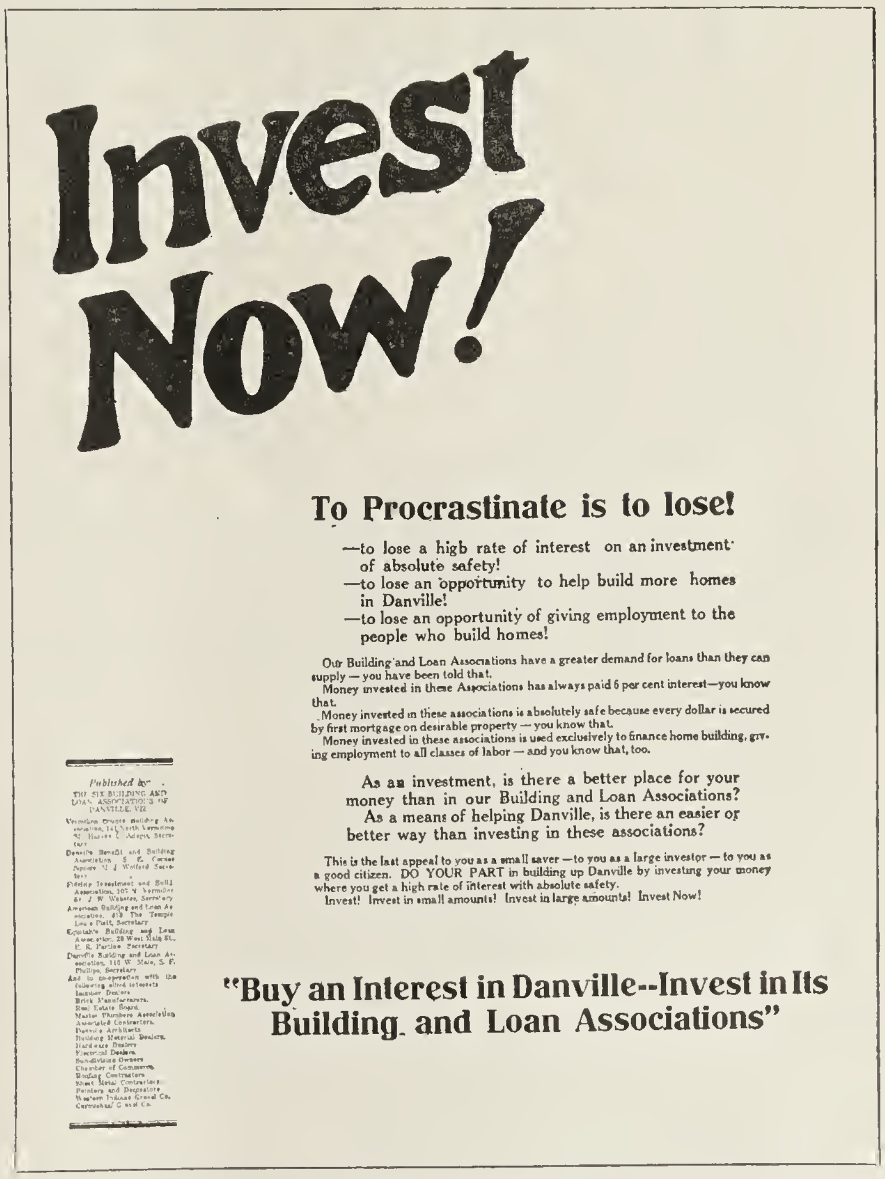
"Buy an Interest in Danville—Invest in Its Building and Loan Associations" is the slogan that was adopted by the campaign committee and formed the basis for the 13 full page advertisements which appeared in the afternoon and morning dailies of that city. The ads appeared three times a week in a total of 13 issues of each publication, the first being inserted on February 13, 1923, and the last on March 20, 1923. The advertising campaign was staged for this time of the year with the thought in mind, that the greatest amount of home building interest is shown in the late winter and early spring months. In connection with this advertising campaign the newspapers ran a news story appurtenant to the building and loan and construction situation of Danville every day during the month of the campaign.

Arthur E. Price, advertising manager of the Danville Commercial News, prepared the advertising copy and in speaking to a Brick and Clay Record representative of the movement said: "This was the finest piece of cooperative effort that I have ever seen. It is the first time that I have seen men contribute money to boost the enterprise of other individuals. There are at present six building and loan associations in Danville and these have deposits of $16,000,000, a sum large than the deposits of the five banks of Danville.

"The feature of the drive was the fact that the method employed was absolutely different from other building and loan associations attempting to raise money. There was no personal work done in connection with the drive other than the securing of the publicity fund. Advertising was used exclusively with excellent results. Newspaper ads and a few small window cards were used and conservative estimates by the various secretaries stated that the campaign brought into the different associations from $300,000 to $500,000."

Benefits of Building and Loan Association Investments

The idea back of the advertising was an attempt to show prospective investors that the building and loan associations pay a high dividend with absolute safety, to show the convenient plan offered under which investors can purchase shares of stock and to show that money invested in building



Invest Now!

To Procrastinate is to lose!

—to lose a high rate of interest on an investment of absolute safety!
—to lose an opportunity to help build more homes in Danville!
—to lose an opportunity of giving employment to the people who build homes!

Our Building and Loan Associations have a greater demand for loans than they can supply — you have been told that.

Money invested in these Associations has always paid 6 per cent interest—you know that.

Money invested in these associations is absolutely safe because every dollar is secured by first mortgage on desirable property — you know that.

Money invested in these associations is used exclusively to finance home building, giving employment to all classes of labor — and you know that, too.

As an investment, is there a better place for your money than in our Building and Loan Associations?

As a means of helping Danville, is there an easier or better way than investing in these associations?

This is the last appeal to you as a small saver — to you as a large investor — to you as a good citizen. DO YOUR PART in building up Danville by investing your money where you get a high rate of interest with absolute safety.

Invest! Invest in small amounts! Invest in large amounts! Invest Now!

"Buy an Interest in Danville--Invest in Its Building and Loan Associations"

Published by

One of the effective and original advertisements inserted in the local daily papers that helped put across the $400,000 Building Loan Campaign in Danville, Ill.

and loan associations help to create business and employment for all engaged in the building trade. It was therefore natural but at the same time gratifying that the building trade of the city should cooperate in this work.

Advertisements Designed to Secure Maximum Reader Attention

The display ads were laid out in a way to get maximum reader attention. The typographical dress was clear and readable, the artistic treatment was appealing in its advocation and strength and plenty of white space was provided in each advertisement to bring the message out in sharp relief.

In a panel in the corner of each display ad was an announcement that the advertising was published by the six building and loan associations and the 14 groups in the building and trade fields, all of which groups were mentioned in each ad. In one of the advertisements the names of those contributing to the fund were published, more with the idea in mind of showing who was back of the proposition than to infer that this was advertising matter for the individual contributors.

Outline of Publicity Campaign

The 13 advertisements were carefully prepared from a sales standpoint, summarized as follows:

1. Story of the campaign.
2. What building and loan associations have done—raised $75,000,000 to finance Danville homes in the past 40 years.
3. Strength of building and loan associations.
4. This ad was dedicated to the allied interests which helped to raise the publicity fund.
5. What money in building and loan associations will do.
6. What this money will do for the working man.
7. What this money will do for the farmer.
8. The importance of investing small amounts of money with building and loan associations.
9. Value of investment.
10. Churches and lodges can advantageously invest their money with building and loan associations.
11. The need for more homes in Danville.
12. Same thought as expressed in No. 11.
13. Same thought as expressed in No. 11.

Strong Background for Campaign

Very fortunately for those who backed the building and loan associations' movement, the six associations of Danville had a strong background for their campaign. They have been financing home construction for many years. The oldest association has been in business for over 45 years and the youngest for over 30 years. At the present time their deposits are over $16,000,000, exceeding by a considerable margin the combined deposits of the five banks of the city. There has never been a loss to an investor in the association and they have never paid less than six per cent interest.

These facts were appealing to every class of investors, particularly the small saver. During the short period of the campaign, close to a half million dollars was raised.

Advertising Copy That Helped Danville Put Over Loan Drive

Danville is a city of homes and the advertising copy emphasized this point. An advertisement calling attention to this fact and to the further fact that a large percentage of these homes were financed by the building and loan associations was put across in the following message:

DANVILLE — A CITY OF
HOME OWNERS

75 Per Cent.

of the people of Danville own their own homes or are buying them.

And, 80 per cent. of the homes built in Danville are financed by our building and loan associations, proving conclusively that these associations are the greatest friends of home builders in the world. In the last 40 years they have loaned over 75 millions of dollars for home building purposes.

One of the greatest needs of Danville today is more homes. Many persons want to build. Desirable places in which to live are at a premium and every new house helps to relieve the situation.

Where is the money coming from to build these needed homes?

The home builder naturally turns to the building and loan associations, but strong as they are, they cannot meet the present demands for loans, unless more funds come in.

For every home the building and loan associations finance there is one more piece of improved property in our city, one more taxpayer, one more bill of material sold, one more job for the building contractors—one more job for the carpenter, mason, plumber, painter, electrician and their employes.

Shut off the building of homes and you shut off one of a city's greatest avenues to prosperity.

Danville's splendid record for home building should be kept up. In its building and loan associations should be every available dollar, because money in these associations has always paid six per cent. or more interest to the depositor and they have never lost a dollar. But above all—if the materials and labor are purchased in Danville, the money loaned by these associations is kept in circulation here—helping you and You and YOU.

BUY AN INTEREST IN DANVILLE
INVEST IN ITS
BUILDING AND LOAN ASSOCIATIONS

Strength of the Danville Associations

The great and constructive strength of the Danville building and loan associations were brought out in the next full page ad in the following words:

Aside from their past record of loaning over 75 millions of dollars for home building purposes, the present strength of the building and loan associations of Danville should command the attention of every person with money to invest—whether he has ten dollars or ten thousand. The money will be safe!

In combined time, these associations have rounded out over 200 years of service. During this time they have never lost a dollar to a depositor. Their combined deposits are over sixteen millions of dollars—a larger deposit than that of our five banks. Our building and loan associations have never paid less than six per cent. dividends on deposits. Few investments pay better and no investment on earth can be safer, for our loans are on homes—the safeguard of American Liberties.

Invest your money in these associations. The money is needed to finance more home building, which will create more employment and prosperity for everyone—including you.

"BUY AN INTEREST IN DANVILLE—INVEST
IN ITS BUILDING AND LOAN
ASSOCIATIONS"

Special Displays Aid Newspaper Ads

At the time of this drive, which was a dual attempt to sell the building and loan associations to the Danville citizens and to interest them in the home owning idea, manufacturers and retailers arranged special window and other displays, illustrating the value of individually-owned homes and the benefit, happiness and contentment that are secured by the families of home owners.

Danville is a city of 40,000 population and during the past 40 years the associations have raised $75,000,000 for the building of homes.

Manufacturers and Retailers Contribute to Fund

Among the firms which cooperated in raising funds for the drive were the following manufacturers, producers and retailers: Acme Brick Co., Danville Brick Co., Western Brick Co., West End Gravel Co., Carmichael Gravel Co., Danville Lime & Cement Co., Material & Fuel Co., Danville Lumber Co., Frank Hill, Andy Holden, C. B. Booten, E. C. Lamm, Ed P. Swisher and Trent Bros.

The Material & Fuel Co. is owned by Ralph McCalmon and J. W. Hunter. W. R. Haupt and R. C. Songer are interested in the Builders' Supply Co.

Following the campaign in behalf of the building and loan associations, the Danville Commercial News has been running double page spreads on the subject of home owning, in connection with which are a few advertisements showing the various steps of construction work. The first of these ads starts with the foundation of the building and the last one shows the finishing touches being put on the lawn and the fronting of shrubbery. There is no competitive advertising in these double page spreads.

* * *

SASKATCHEWAN MAY OFFER COMPETITION

A close watch is being kept by the Department of Commerce on reported developments in the brick and clay producing fields of Saskatchewan, which are said to give every indication of bringing about keen competition with United States clays in the very near future. There are extensive deposits of clays in Saskatchewan, which, it is said, are of excellent quality and very suitable for the manufacture of brick and tile. Brick made from the clay have already appeared in Washington, Oregon and California. It is understood that should the clays prove satisfactory, brick and tile products made from them will take the place of materials now shipped from the United States.

* * *

HOPE FOR MORE IMMIGRATION

Immigration will again be brought to the attention of Congress when it meets in its next session. A bill calling for unlimited immigration from preferred countries like Germany, Norway, Sweden, England and other European countries is to be drafted by a member of Congress, it was stated. This program calls for boundaries drawn latitudinally and longitudinally and the bill would bar substantially all of some races and peoples and no limitation would be placed upon the movement of others. The present three per cent. act expires on June 30, 1924, necessitating some sort of act at the session of Congress in December.

* * *

Thinks 1924 Building Material Prices Will Not Drop

PROSPECTS for the 1924 building construction industry are gaged for the trade by the Dow Service daily building reports.

New York City recorded $523,000,000 worth of construction, mostly housing, in 1922. The present year should have turned a total of $560,000,000 before this time in New York City had it not been for the futile buyers' strike lasting from May to the end of August. With the work deferred, mostly commercial construction, and that which would normally develop in 1924, that year should, by all the rules of normal building progress and economic trends, mark the first $600,000,000 year for the city and, incidentally, the first $6,000,000,000 for the country.

No Higher Material Costs Likely

A $600,000,000 for New York or a $6,000,000,000 year for the country does not carry with it today the same intimation of higher building material prices and construction costs as the identical estimate would have indicated had it been made a year or more ago.

Building material manufacturers everywhere have prepared themselves for such a drain upon their plant capacities and financial resources. In these two respects they are in better shape than they have been at any time since the war. Demand alone does not create areas of prohibitive prices. Such crises come only when supply cannot meet current requirements. In 1920, 1921, 1922 and most of 1923 the nation's basic building material manufacturers were unprepared for the crush of demand. Most of that time their credits were temporarily impaired by inquisitions and similar legislative procedure. The recent building reaction has permitted them to pile up some reserve and to provide for greater output, hence more stable prices.

Foreign Materials Test Domestic Prices

Price sags are not to be generally looked for next year for the following reasons:

The acid test toward squeezing out what water there was in basic building material prices along the Atlantic seaboard developed this summer when foreign materials came in to compete with domestic materials for the scanty construction offerings then made. Domestic prices held fairly firm and the prices for imported materials advanced "as far as margins would permit."

Foreign competition is easily within the control of domestic building material manufacturers. Greater production capacity enables them to cut costs. If domestic prices drop too low foreign goods cannot compete. In the approach of winter and the usual autumnal shifting of labor at manufacturing centers (this year largely toward steel mills) foreign building materials have a roseate future.

* * *

SOUTHEASTERN TILE DEALERS MEET

About 50 members of the Southeastern District of the National Tile Dealers' Association, including members from all of the principal cities of the Southeast, attended the annual meeting of the district association held recently in Atlanta at the Hotel Ansley, discussing conditions affecting the industry and outlining plans for the work of the association and its members during the coming year.

E. P. Butler, president of the National association, was one of the principal speakers. Others were Charles L. Gerstner, of Rochester, president of the Northern District; C. W. McCauley, of Wilmington, president of the Atlantic Coast District; and J. R. McClamroch, of Greensboro, N. C., president of the Southeastern District.

Correct Methods of Farm Drainage

The Second Part of This Article Telling Exactly How to Build a Drainage System, the Kind of Tools to Use and How to Go About the Work

H. B. Roe

In Charge of Drainage Activities of the University of Minnesota, Department of Agriculture, University Farm, St. Paul.

Editor's Note—This is the second part of Mr. Roe's article on "Correct Methods of Farm Drainage." The first article treated of Survey and Design, while the second one describes the necessary points of construction.

Armed with these two articles the drain tile manufacturer can give his farmer customers real service of a nature they will appreciate. He will be able to go to his customers and say, "Here, this is the way you should tile your land."

The author, H. B. Roe, is a competent authority, having had years of experience as an engineer and for the last few years being connected with the University of Minnesota in the capacity of investigator and instructor.

PART II.—CONSTRUCTION

DITCHES with bottom width two feet or less, depth of only three or four feet and side slopes not flatter than 2 to 1 can usually be dug most cheaply by hand. (See top view figure 1, Part I.) The best tools for such work are the same as are used in tile trenching by hand. (See figure 12.) Grades can be carried in the same way as in tile trenching. (See figures 15 to 18.)

On extensive jobs it may pay to hire a contractor who operates a small open ditching machine of the bucket wheel type, but the purchase price of such a machine is prohibitive for the individual farmer.

Large Standard Ditches

Standard ditches of a size beyond the limit of economical digging by hand where such must be had on the farm may usually be best and most economically dug with teams, plows and slip scrapers or wheel scrapers, the bottom and slopes being finished by hand with a spade or shovel and mattock. Having reached the proper grade just opposite each slope stake the ditcher may test his entire grade as shown in figure 11. In open ditching the grade need not be made with such nice exactness as is required in trenching for tile. As a rule varia-

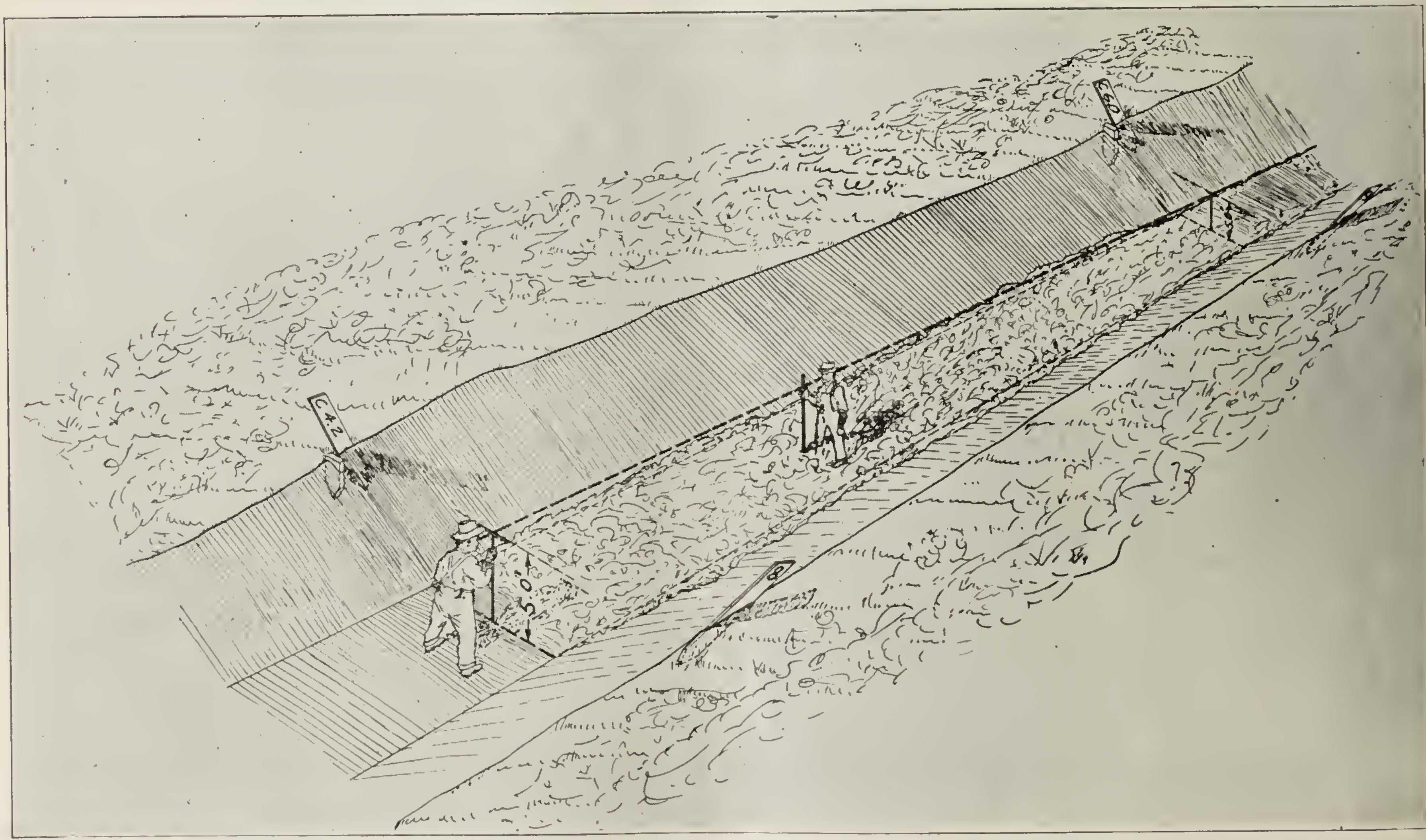


Fig. 11. Method of Testing Grade of Large Ditches Where Exact Levels Have Been Taken on Hubs Set Along One Line of Slope Stakes.

tions up to one-half inch may be allowed above established grade. Depressions of even greater amount will cause no serious trouble in an open ditch as they will usually soon fill, by erosion, up to the general line of the bottom of the ditch.

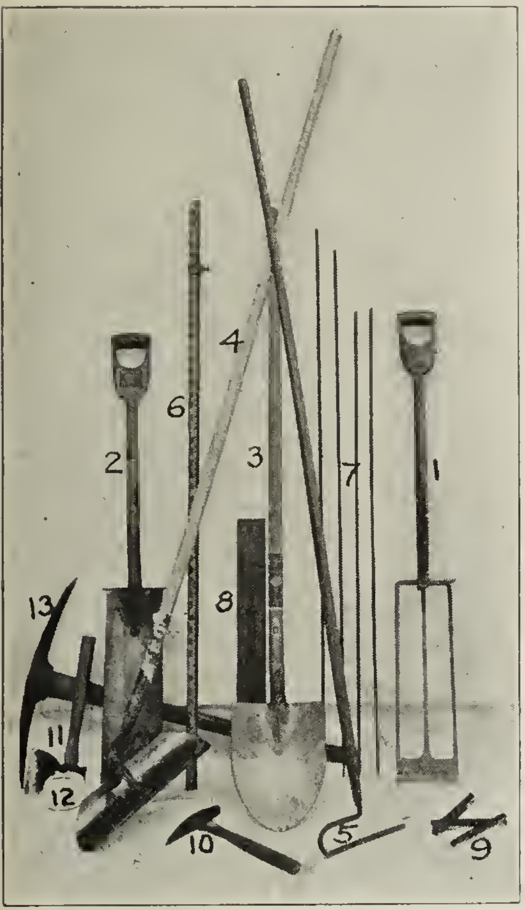


Fig. 12. Tools Used in Tiling by Hand. 1. Skeleton Blade Spade. 2. Solid Blade Spade. 3. Long Handled Round-nosed Shovel. 4. Drain Cleaner. 5. Tile Hook. 6. Five Foot Gage Rod. 7. Target Rods. 8. Carpenter's Level. 9. Six Foot Rule. 10. Prospector's Pick. 11. Hand Axe. 12. Ball White Cotton Twine. 13. Pick Axe. 14. Chalk Line (100 ft.) not shown.

V-Shaped Ditches

Such ditches are usually quite small. They may be made quickly and cheaply with a plow, run successively in the same furrow, in the case of intercepting ditches always in the direction to throw the material to the down-hill side. The crumbs and loose earth may then be quickly cleaned out by hand with a shovel. This kind of ditch can be dug very quickly and cheaply with an ordinary road grader drawn by whatever type of power is available, but tractor power is the most satisfactory for this class of work. In soil tolerably free from roots and rock an ordinary push grader like the Martin is a very economical and efficient means of digging such ditches.

The use of the Capstan plow for ditching is not to be recommended because it has a tendency, that cannot be overcome, of burying itself in low soft ground and of pulling out on the hard ground so that the result is just the reverse of what is desired. The bottom of the ditch is a series of rises and falls worse than the original unditched condition and good drainage is not secured in the majority of cases.

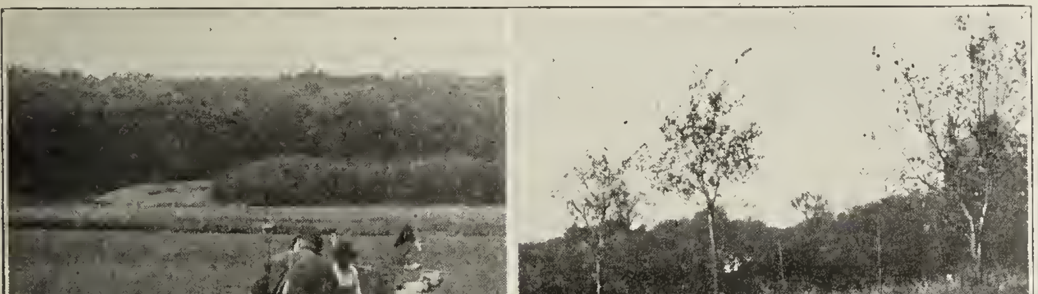


Fig. 13. Digging to Guide Line.

(a) Note That Tiler Faces Outlet and Digs to a Line Drawn Tight Alongside Marker Stakes.

(b) Guide Line on Curve. See the Short Pegs Holding the Line to a Smooth Curve.

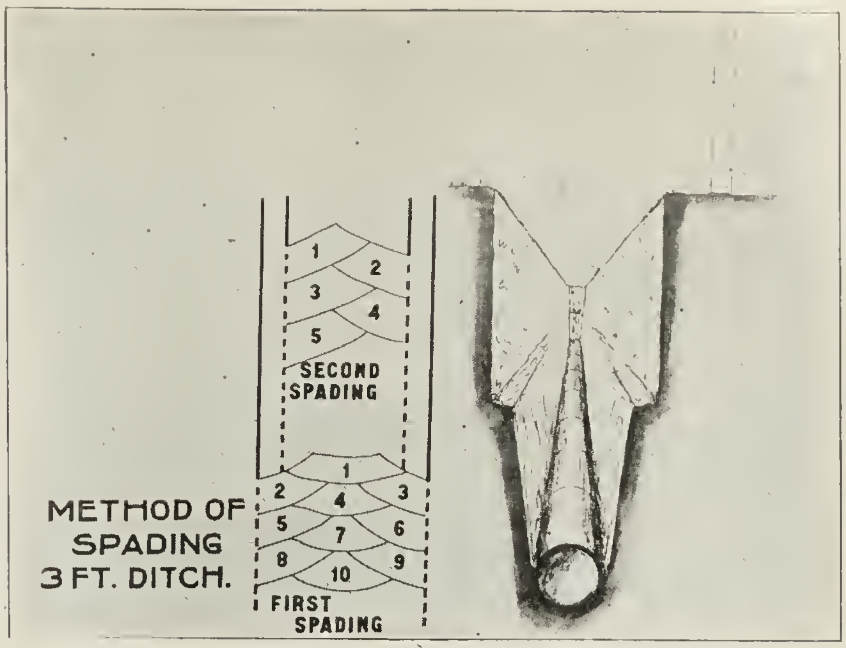


Fig. 14. Plan of First and Second Spading and Sectional Perspective on a Three Foot Tile Trench.

Digging to Guide Line

Digging should commence at the outlet and proceed upstream. It is very necessary to dig the trench to straight lines and on smooth curves. The only way to get this result is to use a guide line for the top spading. The guide line should be stretched along the marker stakes as shown in figure 13a. If the top spading is done to imperfect line, it is practically impossible to smooth up the line on later spadings. On curves this line should be stretched reasonably tight past the regular stakes and between stakes it should be drawn outward to a smooth curve and fastened by pegs as shown in figure 13b.

Only the unskilled workman will try to dig the trench straight without a guide line.

A light weight hard twisted cotton clothesline or a heavy chalk line make the best type of guide line. It is possible to use binder twine for this purpose but it does not hold its position very well, especially in the wet.

Most of the spading is done with a tile spade. In very loose soils the solid blade is best, but in most soils, where the texture or the moisture is sufficient to hold the soil particles together, the skeleton blade tile spade is the handiest as it is lighter and sticky soil drops free from it more readily.

In digging with a tile spade one should not set it square across the trench nor attempt to take either a full width or a very thick bite, as the side friction will be too great to break it loose readily. (See figure 14.) After the blade is settled to its full length the handle should be thrust slightly forward to break the side bond of the earth slice before the spade is pried backward to lift out the slice.

Cleaning Out the Crumbs

The crumbs loosened but not lifted by the tile spade are best removed by means of the number two long handled, round nosed shovel. Under very wet conditions the perforated muck shovel is the tool to use. The man stands in the trench facing up grade and casts out the crumbs all to one side.

A line of targets must be set as a guide by which to finish the trench to exact grade. The object of the targets is to establish a line in the air a fixed distance above and parallel to what is to be the line of the bottom of the finished trench. The height of this line above the bottom of the trench should be one convenient to the height of the tiler, say five feet.

There are various types of targets any one of which is tolerably satisfactory. (See figure 15.) If wood or metal targets are used the white and the red faces should be set alternately against each other along the line as red will not show against red nor white against white but either will show plainly against the other.

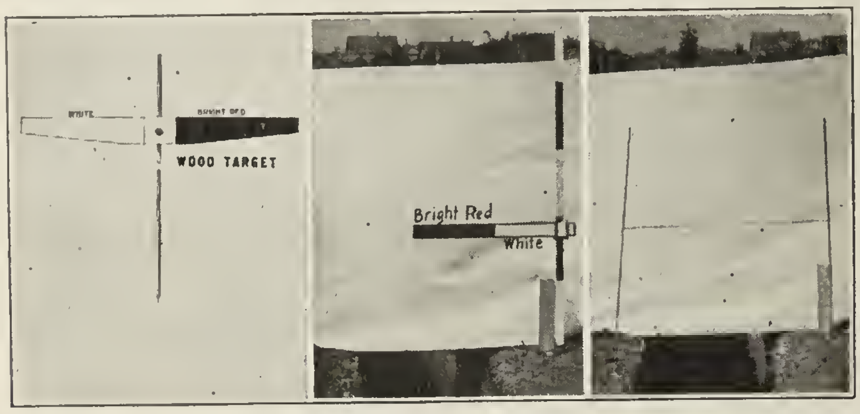


Fig. 15. Type of Targets Used in Tiling. a. Swivel, Wood or Metal. b. One Way Wood or Metal. c. White String Targets. (Common Hard Twisted Cotton Twine).

Type c is the most satisfactory type for use in tiling by hand. A dark object should be set up behind so that the string can be readily seen.

Setting the Targets

(When the cut from the hub stake is less than 5 feet.) For convenience let 5 feet be assumed as the height the target is to be set above grade.

(1) Subtract the established cut at the given station from five feet. (See placard in figure 16.)

(2) Drive a small iron rod (5/16 inch or 3/8 inch) or a stiff tall stake just back or alongside of the hub on the outside and another similar rod square across the proposed trench from the first rod. (See figure 16.)

(3) On the first iron rod measure up from the top of the hub the amount 1.58 obtained in step (1) and tie the white cotton twine to the rod at this point; stretch this twine across to the second rod and tie it thus, making it as near level as the eye can judge. The zig zag rule, graduated in feet and inches on one side and in feet, tenths and hundredths on the other, is the handiest type of measure to use.

(4) Level the string with a carpenter's level. Check the measured height (1.58 feet) on the first side and after adjusting this, if needed, check the leveling.

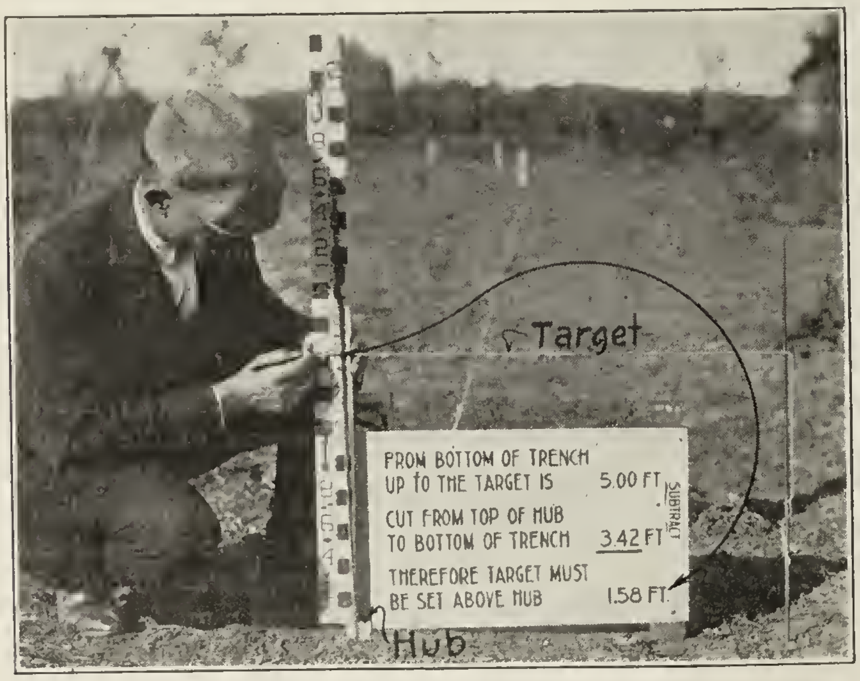

Target
FROM BOTTOM OF TRENCH UP TO THE TARGET IS 5.00 FT
CUT FROM TOP OF HUB TO BOTTOM OF TRENCH 3.42 FT
SUBTRACT
THEREFORE TARGET MUST BE SET ABOVE HUB 1.58 FT
Hub

Fig. 16. Setting a White String Target Five Feet Above Proposed Bottom of Trench.

Targets must be set at not less than three stakes at any one time along any given strip of continuous grade and five or six is better. Each target must be set from the cut required at its own particular hub stake. If the engineer's work and the target setting are both perfect all the targets along any given grade will line up and be projected against the background as one line and the line of sight along such a series of targets, as line AB in figure 19, **will at all points be just five feet above the proposed bottom of finished trench.**

For a number of reasons a series of targets along a given stretch of grade may not line up quite perfectly. In such a case, assuming that the greater number of targets which do line up are on the correct grade, move the others up or down as the case may be until they all come into line, being sure to keep all targets level. Before any such adjusting, examine all hub stakes to be sure that none have been disturbed. If any great differences occur at any stake it is probable either that the recorded cut is wrong or that there is a mistake in the measured height of the target.

Where the cut from the hub stake exceeds five feet or whatever distance is to be used as the target height the targets cannot be set until the trench has been excavated below a cut of that amount. In that case the rods holding the target must be driven slanting into the sides of the trench, five feet must be subtracted from the cut and the remainder measured down from the hub or from a level line set across the top of the hub.

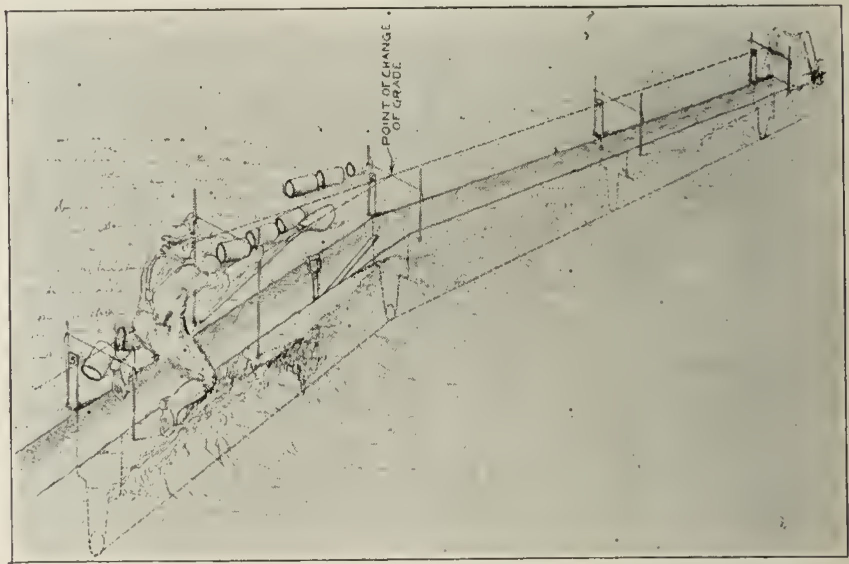


Fig. 17. Lining in Extra Target at Point of Change of Grade.

Setting Targets at Points of Grade Change

The tiler works up grade from the outlet and facing the outlet, hence the target line by which he is working is always down grade from him and over a finished part of the trench. Therefore at the outlet and at points of changes of grade, after the targets have been set behind the tiler along the grade on which he is about to work, an additional target must be set by eye below the outlet or below the point of change of grade in line with those extending up grade from this point, so that the workman may always have below him a target line from which he may check until he passes the second regular stake on a given grade. (See figure 17.)

How to Use the Targets—Gage Rod

Figure 18 illustrates the use of the targets after they are set. Line AB is a sighting line passing thru all the targets on a given grade. If the targets be set five feet above the grade of the bottom of the trench, it is clear that when the top of a five foot stick or gage rod held vertically by the tiler with its base resting on the bottom of the trench, lies in the line of the targets the bottom of the trench at that point is at proper grade. In this way the tiler may test the grade of every inch of the trench. Many workmen prefer to put a notch in the handle of their drain cleaner at the proper height from its point instead of using a separate staff, but in loose or soft ground the weight of the drain cleaner alone will often make its cutting edge settle enough into the bottom of the trench to cause serious error in testing the grade. Therefore a slender wood staff with square sawed ends is to be preferred as a gage staff.

Finishing the Trench to Grade

The tool used in finishing the bottom of the trench is the crusher or drain cleaner, which is made in different sizes to finish the bottom to a shape that just fits the outside of any size tile. The handle can be set at just the right angle to enable the tiler to control its motions exactly in planing the bottom of the trench. (See figure 19.)

If the bottom of the trench checks too high in any spot the crumber should be placed snug against the bottom of the trench where the grade is correct just back of the high spot and drawn forward, with this finished part of the trench, as a guide until the blade of the crumber cuts off the high spot much as a jointing plane trues up the edge of a board. Great care should be taken to plane just to grade and never to cut too low. If, however, one does cut too low in any spot this hollow should be filled back with well pulverized material like the bottom of the trench; this material should be well tamped with the crumber and the bottom of the trench again planed to grade.

Digging Deep Trenches

The blade of a tile spade is 20 inches long. A three foot trench is what is spoken of as two spadings deep and is taken out as shown in figure 14, but where the trench is any considerable amount over three feet in depth a third spading or even more must be taken out, according to the depth.

Where the depth of trench exceeds eight feet, it will be necessary to use staging and two or more lifts, the bottom man casting it to the first staging, from which a second man passes it to another higher staging or to the top, according to depth. In loose material or in clay or other materials liable to slide along lines of cleavage or cracks, or to cave, it is necessary, in trenches over six feet in depth, to use plank stays and trench braces to prevent caving. In deep trenches where there is a tendency to slide or cave over a considerable length of the trench the only safety either for the work or for the workmen lies in using continuous curbing held in place by lagging and bracing that will not give way. Such curbing should all be removed before the trenches are refilled.

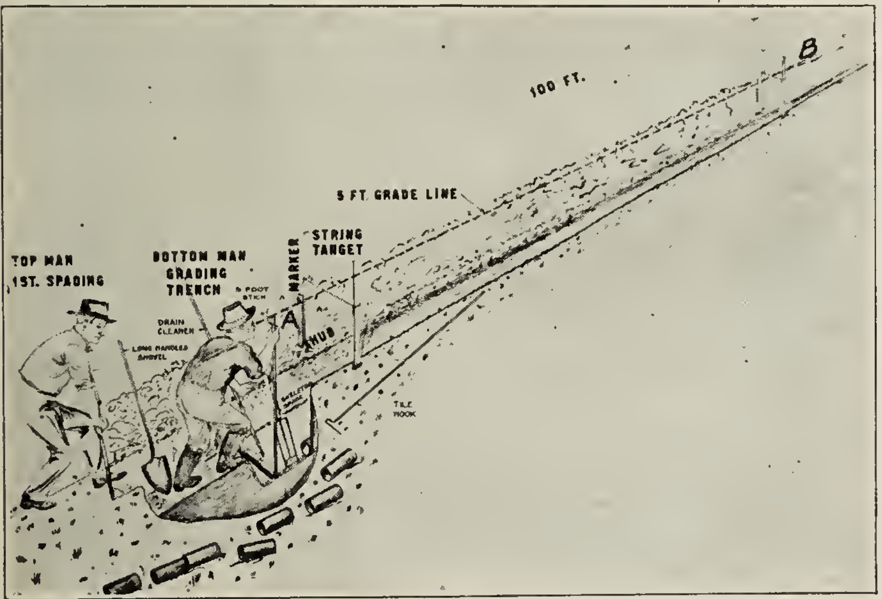


Fig. 18. Method of Tile Trenching by Hand. The Man Digging Top Is Here Shown too Close to the Bottom Man But This Is Due to the Limitations in Drawing the Picture. Ordinarily These Men Should Be 50 Feet or More Apart.

Do Not Use Cracked Pieces

In laying the tile the workmen should reject all pieces that are cracked for more than two or three inches of their length or that are badly chipped or so deformed as to make an imperfect job in laying or those that are evidently of poor quality. Good tile will be of fairly uniform round cross section with square ends, free from cracks, shakes, and blisters, with walls of uniform thickness, hard and dense. A good tile when stood on one end and tapped lightly with a hammer will give out a clear metallic sound.

Laying the Tile

The tile should never be laid by machine. It should be laid by hand, to an even line with tight joints, presenting the appearance, before covering, of a continuous pipe. (See figure 20b.) It should be kept laid up to within a few feet of the finished trench. If a tile does not fit tight against that previously laid it should be turned on its longitudinal axis until the tightest possible joint is secured. Each piece of clay tile as laid should be given a smart tap by tile hook or heel to make it fit tightly against the last laid piece. This should not be done with small concrete tile whose ends are made very perfect as such action tends to make the joints too tight unless the tile be made with notches in the ends. Such tile should therefore be laid with rather loose joints. Where joints lie open more than one-eighth inch, on curves or due to imperfection in the ends of the lengths of tile, these open joints must be covered with broken pieces of tile (tile bats), grass clods, hay, or tar paper. Small tile up to eight inches may be laid very readily either by means of the tile hook (see figure 20a) or by hand (see figure 20c). Larger tile must be laid by hand and sizes too large to be readily lifted must be handled by means of a derrick or some type of mechanical hoist.

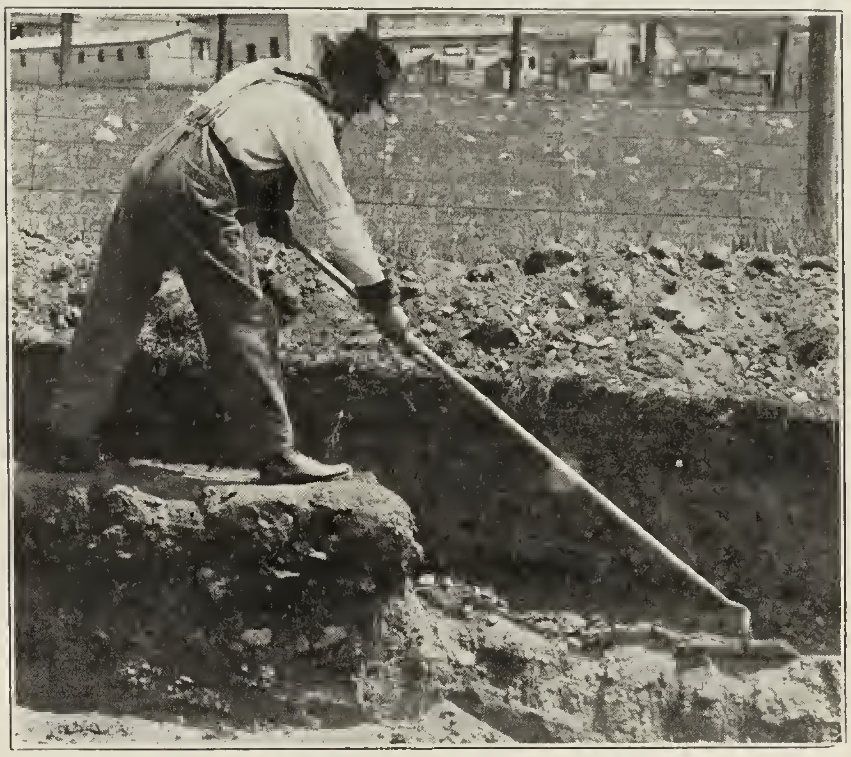


Fig. 19. Showing Method of Finishing Tile Trench to Grade with Crumber.

Junctions and Trimming for Curves

For sizes of tile up to and including 12 inch tile, factory made junctions are nowadays quite readily obtainable but the tiler should know how to make his own junctions on the ground by hand. Any light hammer or hand axe with sharp square corners on a flat face on one wing, and a pointed end or slender corner on the other may be used, but the best tool for this purpose is the light prospector's pick (No. 10, Fig. 12) in a one-fourth or one-half pound weight.

To cut the hole for a junction in a small tile a good way to start it is thoroly to fill a length of tile with dry sand to prevent vibration and cracking, holding it between the knees with two small boards to keep the sand in. Then a prolonged series of very rapid light taps in the same spot with the face of the hammer will soon result in a small hole without cracking the tile if care is used and the job not hurried. The enlarging is done in the usual manner.

Where curves are too sharp or tile too large to lay

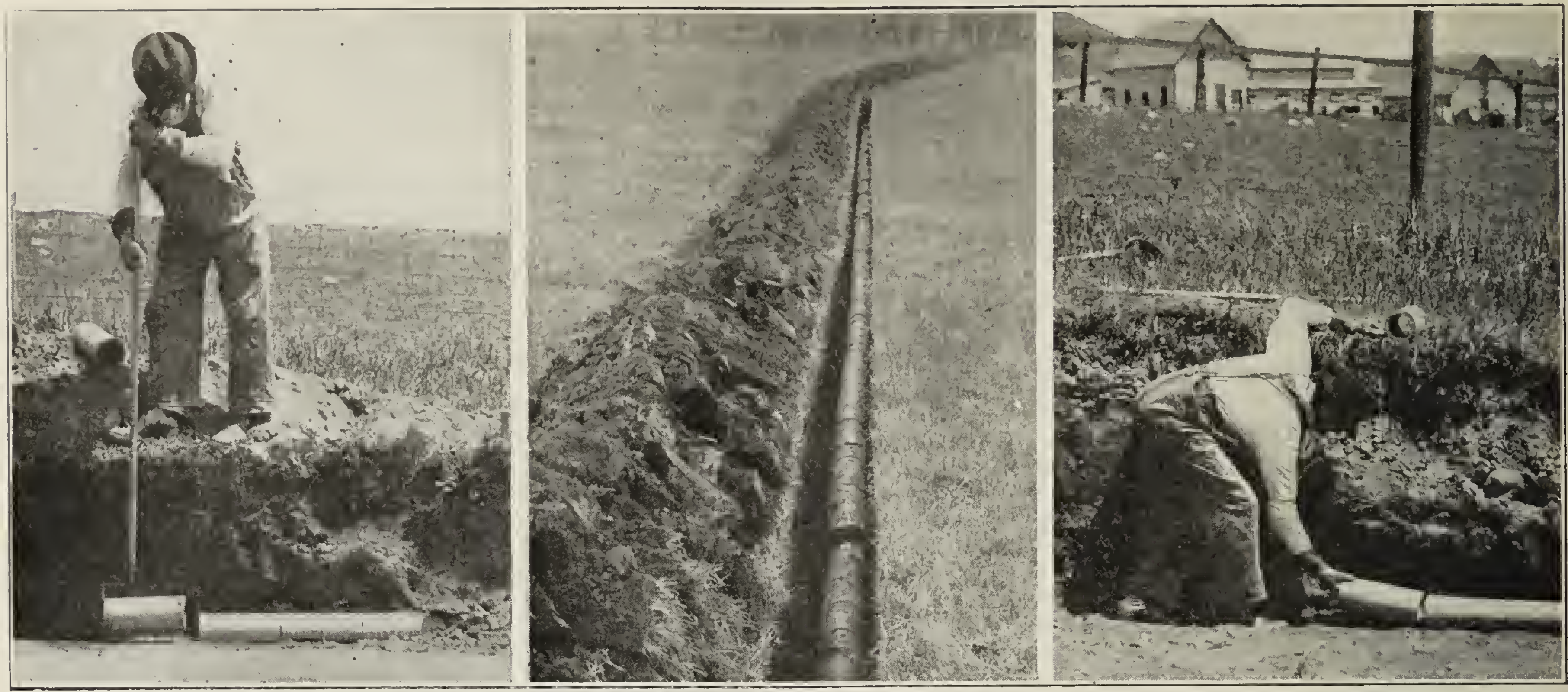


Fig. 20. Laying Tile. a. Laying Tile with Tile Hook. b. Tile in Trench Ready to Blind. c. Laying Tile by Hand.

in curves with joints open and covered with tile bats on the outside, the open joints may be avoided by cutting the ends of the tile to a slant to fit the curve. This cutting is done most readily by catching the edge of the tile in the jaws of a monkey-wrench and breaking off fragments, as needed, by pressing down sharply on the handle.

Keep the Tile Clean

The tile must be kept clean while laying. Earth in a tile line will attract roots and cause a stoppage of the tile. Earth is easily dumped out of small, tile while laying. With large tile the usual method is to tie a large burlap swab to a short length of small rope and draw it forward thru each newly laid tile.

In wet trenches a sheet iron dam (see figure 21) should be used, whenever the work of laying is temporarily stopped, to prevent fouling of the tile.

In sand or quicksand in wet trench, a sand shield of galvanized iron (see figure 22) is used to prevent the sand from running in and spoiling the bed of the trench. The bed of the trench is finished inside this shield and the length of tile laid, the sand shield is then pulled forward its own length and the process repeated. This equipment insures laying the tile to grade.

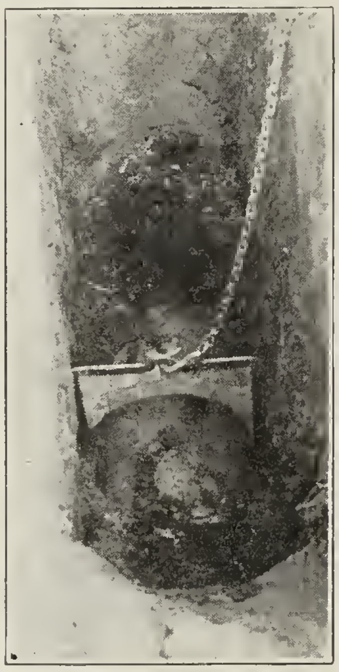


Fig. 21. Trench Dam in Position.

Blinding

Any freshly laid line of tile should be covered to a depth of four to six inches close up to the end of any day's work to hold it in place against the action of the elements or any artificial disturbance until the trench filling is completed. This is called blinding the tile. It is done by the tiler walking astride the trench and cutting down earth from both sides of the trench below the surface with a tile spade. In blinding care must be taken not to disturb alignment of the tile nor the batted joints.

It is possible to use almost any method in refilling the trenches that will move the material. It may be done by hand with shovels, by plow, by team and scraper, by road grader drawn by tractor power or by numerous other special methods and devices. Short sections near buildings, fences and other places inaccessible by teams and machinery must be filled by hand, as must also a short length of trench at the outlet to provide turning ground for teams and machinery.

Under ordinary conditions the quickest and cheapest way to refill the small or shallow trenches is with a common walking plow drawn by two teams, one on each side of the ditch. The long evener should have a series of holes six inches apart bored near its center for the king pin, to permit of quick readjustment to fit the ground, position of trench, and so forth, as the plowing is done up and down either side of the trench regardless of the position of the spoil bank.

For very large jobs the road grader drawn by a tractor is a very efficient and cheap method.

If the scraper is used the team must be attached to it by means of a long light chain as the work is done cross-wise of the trench the team being on one side and the scraper on the other. The ordinary slip scraper is clumsy and rather slow. The type of small buck scraper commonly used in filling sewer trenches is very satisfactory for this work.

Protecting Outlets

The last 15 or 20 feet of an outlet tile line should be of continuous corrugated iron culvert pipe of a size just large enough to receive the end of the last regular tile with a snug fit. This is usually sufficient protection against crushing, especially if the outer end of the culvert is stiffened by having a ring of three-fourth inch round iron rolled into it when made up. Such a culvert is often, too, all that is needed to prevent washing out of the tile outlet except where there is a heavy flow of water in the open ditch or channel part of the outlet, and a heavy lateral erosion of the soil around it or a considerable fall of the water from the mouth of the tile itself tending to cause undermining of the outlet pipe. Where these conditions exist a protection bulkhead of good concrete should be built around the outer end of the culvert. Figure 23a shows a good type of such bulkhead. In building it extra care should be taken to carry the foundation down to a bed of firm gravel or clay, preferably the latter so that seepage cannot undermine the bulkhead. Figure 24 shows the history of an originally good tile outlet that the owner failed to protect properly when first installed. Figure 25 shows a good type of well protected tile outlet.

Screening the Outlet

Tile outlets should be screened against the entrance of birds and animals to eliminate one dangerous cause of clogging of drains. The screen may be built of fine mesh poultry netting or in the form of a grating of iron bars. It may be permanently imbedded in the concrete of the outlet bulkhead or built into a removable frame of wood or metal. The removable type is preferable as it readily permits the cleaning away of refuse that may accumulate back of it. (See figure 26.) The spaces between the bars are about an inch wide.

Catch basins of a type similar to that shown in figure 23b should be installed in yards where flood water settles or to receive the rainwater from roofs of buildings or from road gutters and carry it to the tile drains. Figure 23c shows a similar type of catch basin used in collecting flood waters behind outlet ditch waste banks and carrying it into the ditch. In all landlocked pockets in cultivated fields that cannot be tapped by flood ditches, surface inlets of the type shown in figure 23d should be installed to prevent the impounding of flood waters in these pockets and the drowning out of crops.

Grade Reducers on Tile Lines

Grades on tile lines much in excess of one per cent. are apt to cause heavy scouring of the water at the tile joints and the undermining of some of the tile with consequent clogging and ruin of the tile lines. Where heavy grades are necessary, as sometimes occurs for short distances, grade reducers of the type shown in figure 23e should be installed.

Willows and some other soft water loving trees growing over or near tile lines will send their roots into the tile in search of food and water and quickly clog the tile, making it useless. Such trees growing near tile lines or on land which it is proposed to tile should be thoroly grubbed out. If this cannot properly be done all tile lines within 50 or 60 feet of such trees should be laid with bell ended sewer pipe and the joints cemented tight with strong cement mortar.

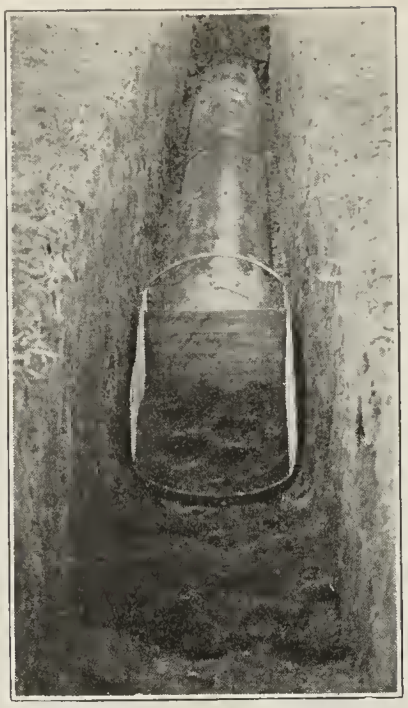


Fig. 22. Sand Shield in Position.

Drainage by Wells

Wells as outlets for drainage are always a lottery and are not to be recommended. Their efficiency is in direct proportion to the dry reservoir capacity of the sand or gravel bed into which they are sunk. If such beds lie wholly within a pocket of impervious soil and their size is comparatively limited, there being no natural outlet, the efficient life of the well as a drainage outlet will be until the sand pocket is filled with water and no longer. It is not feasible, within reasonable cost, to determine the water capacity of any such sand or gravel bed. Wells dug into clays are totally useless as drainage outlets and drainage into wells is a menace to health and forbidden by law in some states.

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Reprints of these two articles may be had from Brick and Clay Record at cost.

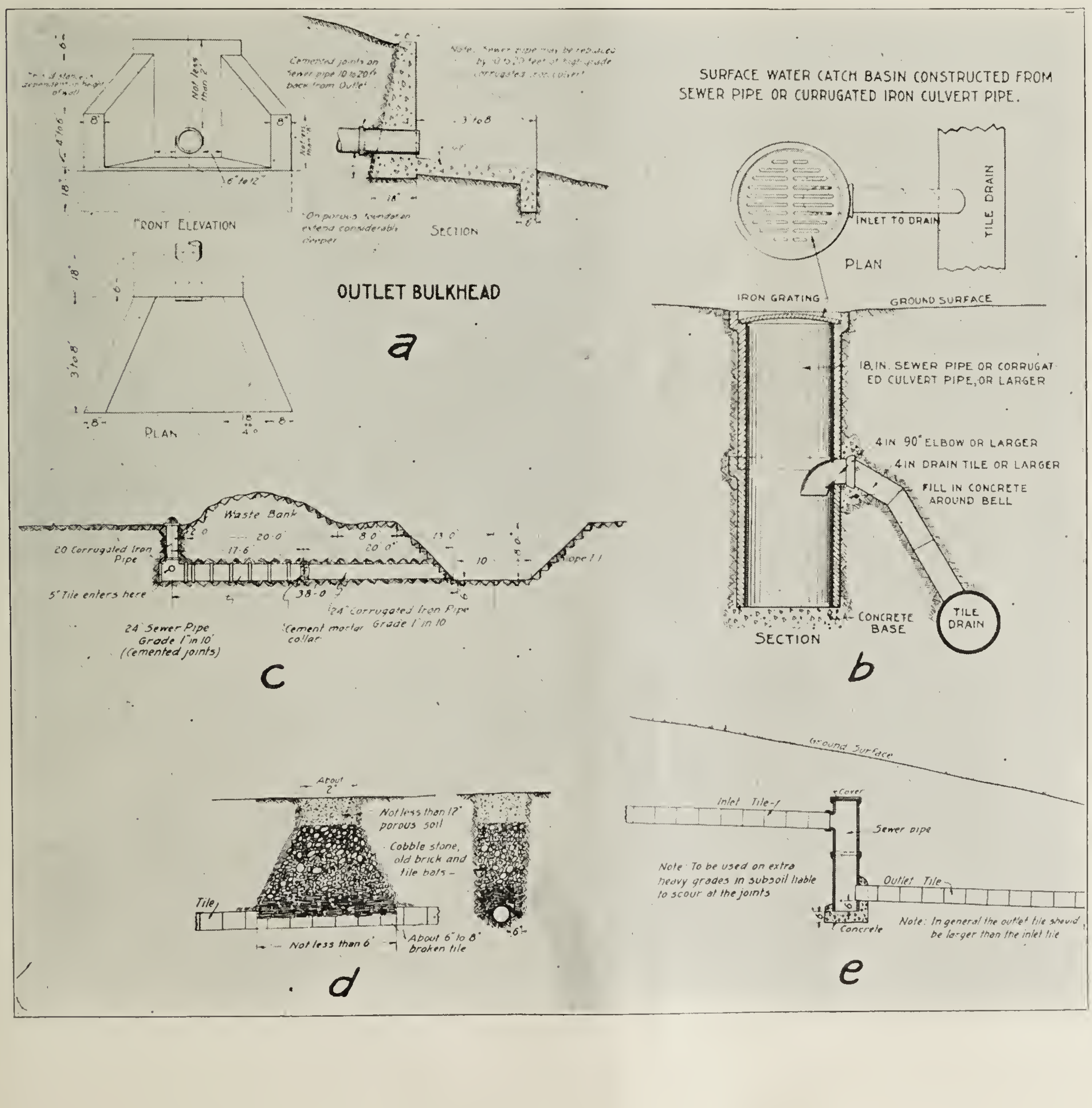

Not less than 2'
8"
8"
6" to 12"
FRONT ELEVATION
Cemented joints on sewer pipe 10 to 20 ft back from Outlet
Note. Sewer pipe may be replaced by 10 to 20 feet of high grade corrugated iron culvert
3' to 8
18"
6"
On porous foundation extend considerably deeper
SECTION
OUTLET BULKHEAD
PLAN
a
SURFACE WATER CATCH BASIN CONSTRUCTED FROM SEWER PIPE OR CURRUGATED IRON CULVERT PIPE.
INLET TO DRAIN
TILE DRAIN
PLAN
IRON GRATING
GROUND SURFACE
18 IN. SEWER PIPE OR CORRUGATED CULVERT PIPE, OR LARGER
4 IN. 90° ELBOW OR LARGER
4 IN. DRAIN TILE OR LARGER
FILL IN CONCRETE AROUND BELL
CONCRETE BASE
TILE DRAIN
SECTION
b
Waste Bank
20 Corrugated Iron Pipe
20·0
17·6
8·0
20·0"
13·0
10
Slope 1:1
5" Tile enters here
38·0
24" Corrugated Iron Pipe Grade 1" in 10
24" Sewer Pipe Grade 1" in 10' (Cemented joints)
Cement mortar collar
c
About 2'
Not less than 12" porous soil
Cobble stone, old brick and tile bats
Tile
Not less than 6'
About 6" to 8" broken tile
6"
d
Ground Surface
Cover
Inlet Tile
Sewer pipe
Note: To be used on extra heavy grades in subsoil liable to scour at the joints
Outlet Tile
Concrete
Note: In general the outlet tile should be larger than the inlet tile
e

Fig. 23. a. Plan of Outlet Bulkhead. b. Plan of Catch Basin for Yards, and so forth. c. Longitudinal Section of Catch Basin and Tile Inlet Behind Ditch Waste Bank. d. Plan of Surface Inlet for Use in Cultivated Fields. e. Plan of Grade Reducer for Tile Line.

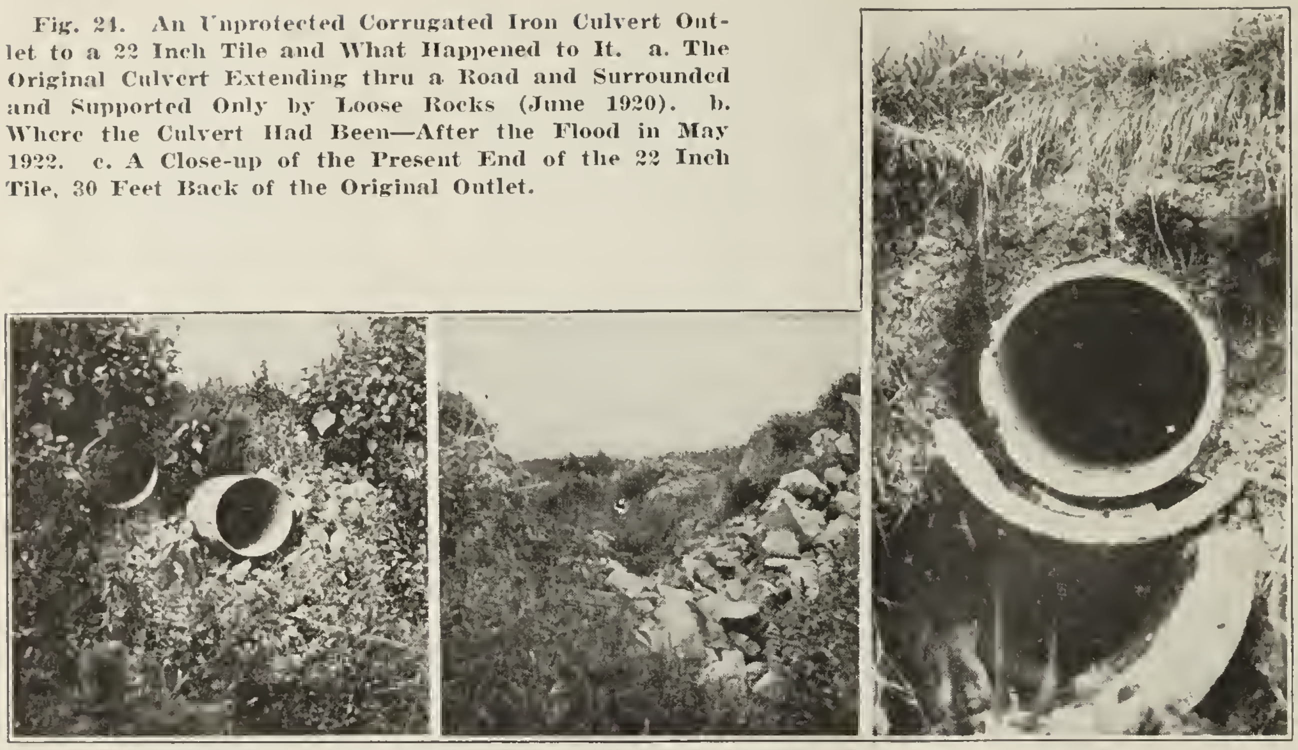


Fig. 24. An Unprotected Corrugated Iron Culvert Outlet to a 22 Inch Tile and What Happened to It. a. The Original Culvert Extending thru a Road and Surrounded and Supported Only by Loose Rocks (June 1920). b. Where the Culvert Had Been—After the Flood in May 1922. c. A Close-up of the Present End of the 22 Inch Tile, 30 Feet Back of the Original Outlet.

Brick and Clay Record desires to call attention to several typographical errors which unfortunately were incorporated in the first article on "Correct Methods of Farm Drainage."

On page 325 in the second paragraph from the bottom of the first column where it reads "possible water control and fire hazard between land five feet" should read "Possible water control and fire hazard between one and five feet."

On the same page in the second line under figure 6a the word "carrying" is wrong. It should be "varying." In the second line of the second paragraph under figure 6a the first word is shown as "bands." It should be "banks."

These corrections are made because those readers who are saving these articles might wish to make them on their copy.

Things the farmer can do to reduce the cost and increase the efficiency of his drainage system

During Construction

Order tile, when possible, for winter delivery and haul.

Distribute the tile along the lines at convenient distances for the tilers.

Fill own trenches by cheap labor.

Cut and grub out all willows and other quick growing and water-loving trees and shrubs in vicinity of tile lines.

Do or aid in doing the digging. (It will often pay him to hire a thoroly skilled tiler by the day for a week or ten days to teach him how to do all the work of tiling.)

After Completion of System

Screen outlet.

Watch efficiency and investigate and relieve apparent stoppages.

Keep debris cleared away from outlets.

Keep open outlet ditches clear of mud, trash banks or other obstructions.

BRICK—THE BEST SEWER MATERIAL

In a recent issue of the Chicago Journal appeared an article by A. S. Barnett, in praise of Chicago's wonderful brick sewers. This article should be of interest to all manufacturers who make brick of a quality which can be used for sewer construction, since it is an excellent boost from an unbiased source. Mr. Barnett says:

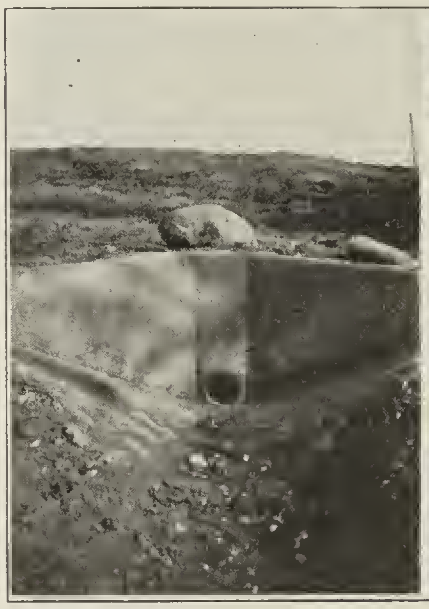
"Chicago is justly proud of her old brick sewers. Other cities may equal its splendor in many ways, but no city in the world has such an enormous and efficient sewer system. Every other noted city, has, at some time in its development, outgrown its sewers, but Chicago never has. The reason is simple: they were properly built of the right material.

"Chicago sewers today comprise 2,300 miles of trunk lines alone. Add to this 11 catch basins, 90,000 manholes and 50,000 human abodes and you will get some idea of the magnitude of this wonderful system.

"Despite the fact that some of the old parts of the city have grown to be noted as the most thickly settled spots in this country, the same reliable, never-failing brick sewers, laid over 60 years ago, have always been equal to the task.

"An engineering structure of any sort that works thus for years without mishap or interruption under such a continuous overflow deserves study. The smaller sewers in Chicago are, of course, built of vitrified salt glazed clay pipe, as in any other city. Those of larger diameter are of hard-burned brick, shaped out of Chicago's own stiff blue clay. They are plain circular sections, one brick thick up to a diameter of 2½ feet, two brick thick up to ten feet and four brick thick over ten feet.

"Geologists tell us that with constant close contact a thousand pounds of water will dissolve a pound of limestone; and we know that lime forms the principal bulk of cement.



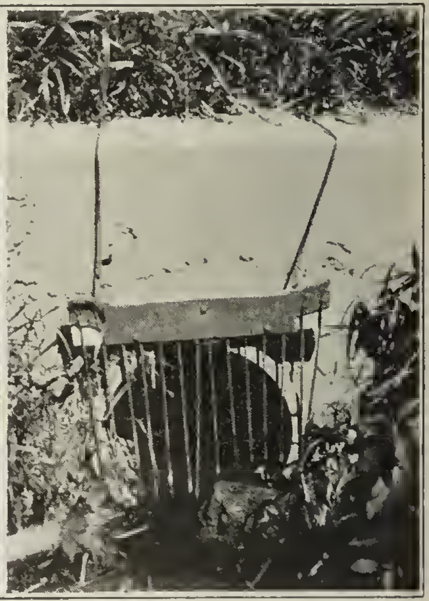


Fig. 25. A Good Concrete Bulkhead on a Six Inch Tile Outlet at the Top of a Sandy Lake Bluff. An Additional Protection Here Is a Concrete Flume Extending from the Outlet to the Base of the Bluff.

Fig. 26. A Removable Outlet Screen on a 14 Inch Tile Main. It is Built of Small Iron Rods in a Wooden Top Frame. It Is Held in Place by Thrusting the Rods into the Ground at the Base and Hooking the Top over the Concrete Bulkhead. This is a Very Serviceable Screen.

"The dismantling of the old Transit house in the stock yards section a few years ago exposed an old sewer made of concrete that was condemned as unsanitary and a menace to the health of the neighborhood by Chief Sewer Inspector F. M. Finstwaite.

"The moral of all this is: why experiment with anything else when brick, after a test of 60 years, has shown it is not even approachable for endurance and general satisfaction by any other material? Stick by the old friend that has stuck by you and continue to use the reliable brick."

PACIFIC CLAY MEN HAVE FINE MEETING

Most interesting and instructive discussions on the subject of dryers and drying were held at the recent summer meeting of the Pacific Northwest Clayworkers' Association at the Northern Clay Co., Auburn, Washington, August 25. Over 40 men from Oregon and Washington attended the meeting and were treated to a very excellent dinner at one of the Auburn restaurants at the expense of the Northern Clay Co. The program itself contained excellent papers and discussions on the above mentioned subjects. The following is a list of topics presented:

1. Clay and Water—Marriage and Divorce. Hewitt Wilson, Ceramic Department, University of Washington, Seattle; 2. Commercial Drying Methods and Dryers for Clay Wares, W. F. Lemley, General Superintendent, Denny Renton Clay & Coal Co.; 3. The Martin Steam Pipe Rack Brick Dryer and the Boss Drying System, Samuel Geijsbeek, Geijsbeek Engineering Co., Seattle; 4. The New Double Deck Brick Dryer at the Builders' Brick Co., F. T. Houlahan, Seattle; 5. The Carrier Humidity Dryer for Terra Cotta, Demonstration, Paul S. MacMichael and A. Lee Bennett, Northern Clay Co.; 6. Heat Losses and Control or Where Your Money Goes, Hewitt Wilson; 7. The Manufacture of Refractories, the New film of the U. S. Bureau of Mines, was shown at one of the local moving picture houses.

Although the Pacific Northwest Clayworkers' Association is a very youthful organization, having been in existence only since January 20, 1923, it has already evidenced a spirit of progressiveness which could well be emulated by other sectional organizations. The association has a membership of 50, which is always well represented at meetings. The tentative date for the next meeting has been set as January 20, 1924, at which time the question of Kilns and Methods of Firing will be discussed.

* * *

New England Brick Yards Co. Sold at Foreclosure Sale

SALE of the entire properties of the New England Brick Yards Co. and the New England Brick Co., comprising properties in Massachusetts, Maine, New Hampshire and New York States, was made by a special master, Lyman K. Clark of Boston, Mass., on September 7, at the office of the companies, 324 Rindge avenue, Cambridge, Mass., under foreclosure proceedings.

Charles B. Wetherbee of the Old Colony Trust Co. of Boston, representing the bondholders' committee, made the purchase, the price bid being the upset price of $180,000. Deposit of the required $65,000 face value bonds of the company, of the Twenty Year First Mortgage Gold Bond series was made with the special master to bind the sale. The sale is now subject to approval by the court and unless objection is made prior to September 17, the sale stands.

Appoint Reorganization Committee

C. B. Humphrey, vice-president of the Old Colony Trust Co. of Boston; Stuart W. Webb, president of the Eastern Manufacturing Co. of Bangor, Me., a resident of Boston; and Joseph I. Eldredge, banker of the Bankers' Building, Post Office Square, Boston, were appointed a committee by the bandholders to bring about reorganization of the company and to effect the purchase of the properties at the foreclosure sale.

Holders of $613,000 face value first mortgage five per cent. gold bonds out of a total of $643,000 such bonds outstanding, have assented to the sale and reorganization plans. Under the plans for reorganization there will be no special change made in the management of the business.

No Outside Capital to Be Secured

It is understood that the New England Brick Yards Co. and the New England Brick Co., the former the working company and the latter a holding company, was unable to weather the business depression of the past few years. Bondholders are confident that with the increasing business in sight and improved conditions, the reorganized company will continue the business successfully.

Officers of the old companies were: President, Arthur S. Blanchard; vice-president, John T. Trennick; secretary and treasurer, William J. Long. These three officers with Thomas Brennan of New York City and David M. Wiseley comprised the boards of directors. The same three officers, Messrs. Blanchard, Trennick and Long, will comprise the officers and the board of directors of the new company.

There will be no additional outside capital secured, all necessary funds for the successful conduct of the reorganized companies being available from present bondholders. The new corporation will be organized under Massachusetts laws whereas the former corporations were organized under Maine and New Jersey laws respectively. A plan of operation has been adopted by the committee and new securities will be issued to the bondholders of the old companies in exchange for their certificates. The new company is given three months' time in which to elect whether or not it will continue any existing contracts, agreements or leases.

No Interruption in Business

It is understood that since the date of sale some of the outstanding bonds not represented at the sale have been purchased by those interested in the reorganization plans.

There will be no interruption in business of the companies thru reorganization, yards continuing to manufacture brick and existing contracts being filled as usual.

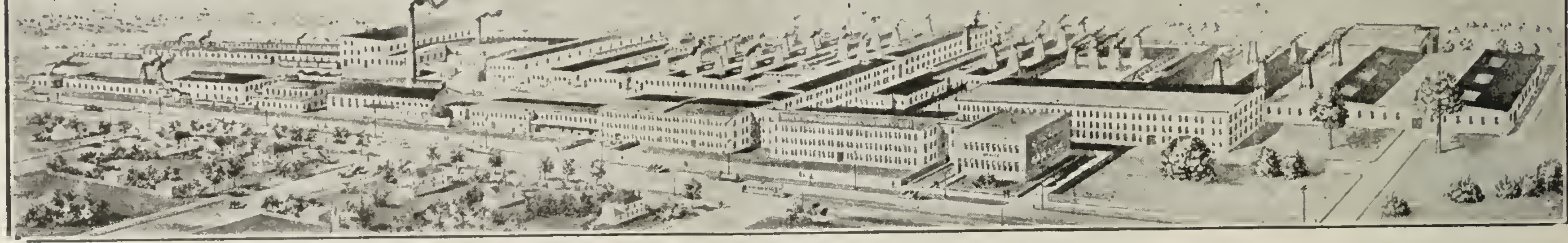
Thru reorganization the new company will secure one of the largest brick companies in the country. The sale includes the offices, equipment, and so forth, in Cambridge, together with the brick yards and all buildings and equipment in the following places:

Belmont, Mass., two properties containing 28 acres; Cambridge, Mass., 38 acres; Cambridge, Medford, Concord and Andover, Mass., containing 225 acres, purchased from the Bay State Brick Co. some years ago; Bridgewater, Mass., 45 acres; Middleboro, Mass., 48 acres; Taunton, Mass., 81 acres purchased from the Taunton Brick Co. in 1900; Lancaster, Mass., 116 acres purchased from the Damon Brick Co. in 1900; Harvard, Mass., 187 acres; Brookfield, East Brookfield, North Brookfield and Sturbridge, Mass, 325 acres; Greenfield, Mass., 11 acres; Montague, Mass., 11 acres; Saco, Me., 20 acres; Columbia Falls, Me., 318 acres; Wiscasset, Me., 3½ acres; Epping and East Kingston, N. H., 127 acres; Kensington, Fremont, East Kingston and Exeter, N. H., 300 acres; East Kingston and Kensington, N. H., 30 acres; Epping, N. H., the former Goodrich Brick Yards, 28 acres; Fremont, Epping and Brentwood, 75 acres; Epping, N. H., 82 acres; Hooksett, N. H., 20 acres formerly known as the Jesse Gault brick yards; Barrington, N. H., 30 acres; Rochester, N. H., 17 acres; Epping and Raymond, N. H., 259 acres from Granite State Brick Co.; Salisbury, N. H., 300 acres; Halfmoon, N. Y., 40 acres purchased from Mechanicville Brick Co.; Stillwater, N. Y., 57 acres purchased from the Best Brick Co., and 18 acres purchased from Norman A. and Henry C. Best.

The original mortgage deed of the companies was issued to the Old Colony Trust Co. of Boston in 1904 and supplemental mortgages issued in 1910, 1912 and 1914. These mortgages covered the entire holdings of the two companies, including real and personal property of the companies, leases, contracts and agreements.

The total acreage in the sale is approximately 2,880.

FINE CERAMIC MANUFACTURE



A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

POOLED SHIPMENTS WILL EFFECT GREAT SAVINGS

A plan has been effected whereby the dealers in pottery and the railroads carrying this fragile ware will save hundreds of thousands of dollars per year, it is said. This has been done thru the efforts of L. E. Peterson, general traffic manager of Abraham & Straus, and with the cooperation of other large department stores of Brooklyn, and the United States Potters' Association. Mr. Peterson, who recently made a trip to East Liverpool, Ohio, said that he had completed plans for consolidated shipping which would practically eliminate breakage in shipment and save time and money. The probability that retail prices in pottery products would be reduced is one direct result of this, he said.

The porcelain and pottery industry centers in East Liverpool where there are a score or more large manufacturers, but shipments have always been made in less than carload lots direct to the dealer, jobber or retailer. The amount of handling entailed resulted in a large amount of breakage, slow transit and incomplete orders being received, with a resultant waste of money in claims and payment of large sums in damages by the carriers. Unless breakage was reduced, the railroads threatened an increase in rates on pottery. Mr. Peterson of Brooklyn came forward with his plan when packing had been carefully studied and abandoned as a possible cure.

Mr. Peterson says: "After conferences with the large department store, dealer and jobber traffic men in New York, and upon receiving assurance of their backing and cooperation, I went to East Liverpool to persuade the manufacturers to pool their shipments into full carload lots to be consigned directly to a central distributing agency in New York.

"I found them receptive and that, in short, is what has been accomplished. Under the old small lots system transfers were made at Pittsburgh, Harrisburg and Waverly Transfer, and consignments handled twice at each place. The result was that seldom did a shipment arrive without a generous proportion of breakage.

"The placing and collecting of claims cost us in the neighborhood of $1.50 a claim in labor and clerical expense. The freight rates are lower on carload shipments. In fact, after allowing for the expenses of distributing here in the city, the freight rate under the new scheme will be 6½ cents per hundredweight less than the old less-than-carload rate. In addition to this from three to four weeks' time will be saved.

"Not only will the receivers of pottery in the East profit by this arrangement, but also those on the Pacific Coast, whose goods can be shipped via New York and the Panama Canal."

IOWA CAN MAKE POTTERY

"The production of a pottery that will compare with that produced anywhere in the world is possible at Iowa State College in the ceramics department, according to Paul E. Cox, head of the work at Ames," says the September 3 issue of Better Iowa. "The state college possesses the equipment for large scale pottery making.

"Last year 200 students, mostly girls, were enrolled in the pottery making course. During the same period about 300 pieces of plain pottery and 35 decorated pieces were completed. 'Every year,' says Professor Cox, 'there are five or six girls in the classes, who have the temperament and the ability to become artists in pottery making.'

"If the plans of the ceramics department work out, an instructor from Newcomb College, New Orleans, the maker of some of the finest pottery in the world, will be on the staff here this fall. At present Iowa State College is the only one in the state that offers a course in pottery making. 17 students are enrolled in the industrial ceramics department and this number is expected to increase to 25 this fall.

* * *

LEASES PACIFIC COAST PROPERTY

The C. Pardee Works, represented by R. M. Zeigler, has just secured a lease on a portion of land in Los Angeles for the purpose of establishing a Pacific coast branch to supplement their activities thruout the East. The lessees are engaged in the manufacture of tile products, including flooring, wall materials and others. The company's present location will serve the purpose of enabling them to determine the possibilities of the coast territory as a field for their products.

* * *

STANDARD TILE READY TO START

Announcement has been made that production would be started at the new plant of the Standard Tile Co. at Norval Park, near Zanesville, Ohio, within a week. The work of making saggers and other forms for the manufacture of tile has been under way for several weeks and everything is in readiness for the start of operations. The plant will employ 100 men at the start and is expected to be working full capacity in 30 days. When working full capacity the plant's payroll will be approximately $5,000 weekly. The plant will produce about 2,000,000 feet of tile a year. The factory is of six kiln capacity.

John M. Morton, general manager of the plant, announced this week that orders are on hand to insure steady operation for several months.

* * *

COMPLETE REORGANIZATION PLANS

Reorganization of the new Dallas (Tex.) Pottery Co., with a capital stock of $75,000, has been completed. The company is to be known as the Love Field Potteries and has purchased 7½ acres of land at Love Field, near Dallas, upon which are erected six former United States Government buildings. Machinery for operating the plant, costing $25,000, has been ordered and delivery begun. Organizers of the new company are L. S. McKamy, president; E. B. Doggett, vice-president; E. T. Jackson, secretary and treasurer, and George L. McClendon, sales manager. Other prominent citizens of Dallas are expecting to take part in the finances of the new company.

* * *

NEW COMPANY TO BUILD PLANT

A new company called the Progressive Ceramics Manufacturing Co. has been organized by Alec Wishnew and Harry Kalin of New York City. A site has been purchased at Warwood, W. Va., and a plant will be built on it. The present plans call for a plant to employ 20 to 40 girls and women.

* * *

OPERATING FIRST MARLOW KILN

The Marlow open-fire tunnel kiln, first of its type in this country, was lighted September 10, in the plant of the Mosaic Tile Co., Zanesville, Ohio. J. H. Marlow is the patentee of this kiln, and he was present at the lighting. The kiln was installed by the Mosaic Tile Co. to fire bisque tile. Robertson-Pease Co. of Cleveland, Ohio, were employed by the Mosaic Tile Co. to assist them with this installation.

* * *

OPEN KAOLIN MINES AT AURORA, MO.

Lewis L. Marquette of St. Louis, a member of the Marquette Mining Co., has begun development work on a bed of kaolin, 2½ miles southeast of Aurora, that promises to give the company a large field of this product. The excavators have gone thru ten feet of refractory clay. The clay is encountered at about seven feet below the surface. The property consists of 40 acres and Mr. Marquette states that if it drills out as indicated now it will be developed in 90 days. Three steam shovels are to be placed on the ground to remove the overburden. If the preliminary test is satisfactory, the company will test the entire 40 acres, putting down drill holes every 50 feet to estimate the tonnage, making a test of every foot of the drill cuttings as they go down. If the acreage proves up as the officials of the company believe it will, the clay will be loaded on trucks and hauled to the railroad for shipment to the plant at St. Louis.

* * *

NEW ELECTRIC PORCELAIN COMPANY

The United States Electric Porcelain Co. at Trenton, N. J., has been incorporated with a capital of $100,000. Pottery and other clay products will be manufactured. Mary A. Wisnieski at 504 N. Clinton Avenue, Trenton, is incorporator.

* * *

WILL HAVE BIG GLAZED TILE CAPACITY

The Beaver Falls Art Tile Co. began a program two years ago of remodeling its original plant along modern lines as to both buildings and production equipment. At the beginning of the current year the increased demand for white glazed tile necessitated the building of an entire new plant, which is now rapidly nearing completion. When completed the two plants will have a working area of 181,000 square feet. Owing to the shipping facilities afforded it by both the Pittsburgh and Lake Erie railroad and the Pennsylvania system, the location is ideal both for receiving raw materials and for shipping the finished product. With the completion of the two plants the Beaver Falls Art Tile Co. will stand foremost in the manufacture of white glazed tile and will produce 6,000,000 square feet of ware yearly.

* * *

Scotland Permits Use of Synthetic Brick

THE ANTICIPATED INCREASE in the demand for brick both in the building and in the engineering trades and the campaign promulgated by the recently organized British Paving Brick Association to increase the use of brick for road paving is having the effect of boosting the brick business. In conjunction with this revival the possibilities of increased kiln output are being considered.

The brick manufacturers here are out to push their propaganda for brick road paving. Most all of the city of London and Westminster is paved with wood blocks and they consider it is time the merits of brick over lumber were made known in convincing fashion. Vice-President Blair of the National Paving Brick Manufacturers' Association (American) addressed the new Association (British) recently and told them all they had learned in America with regard to the manufacture of brick for road paving. They had, he said, learned mostly thru their mistakes, and there is much yet to learn in the art of making brick that will oust other media for road paving.

Paving Brick Successful

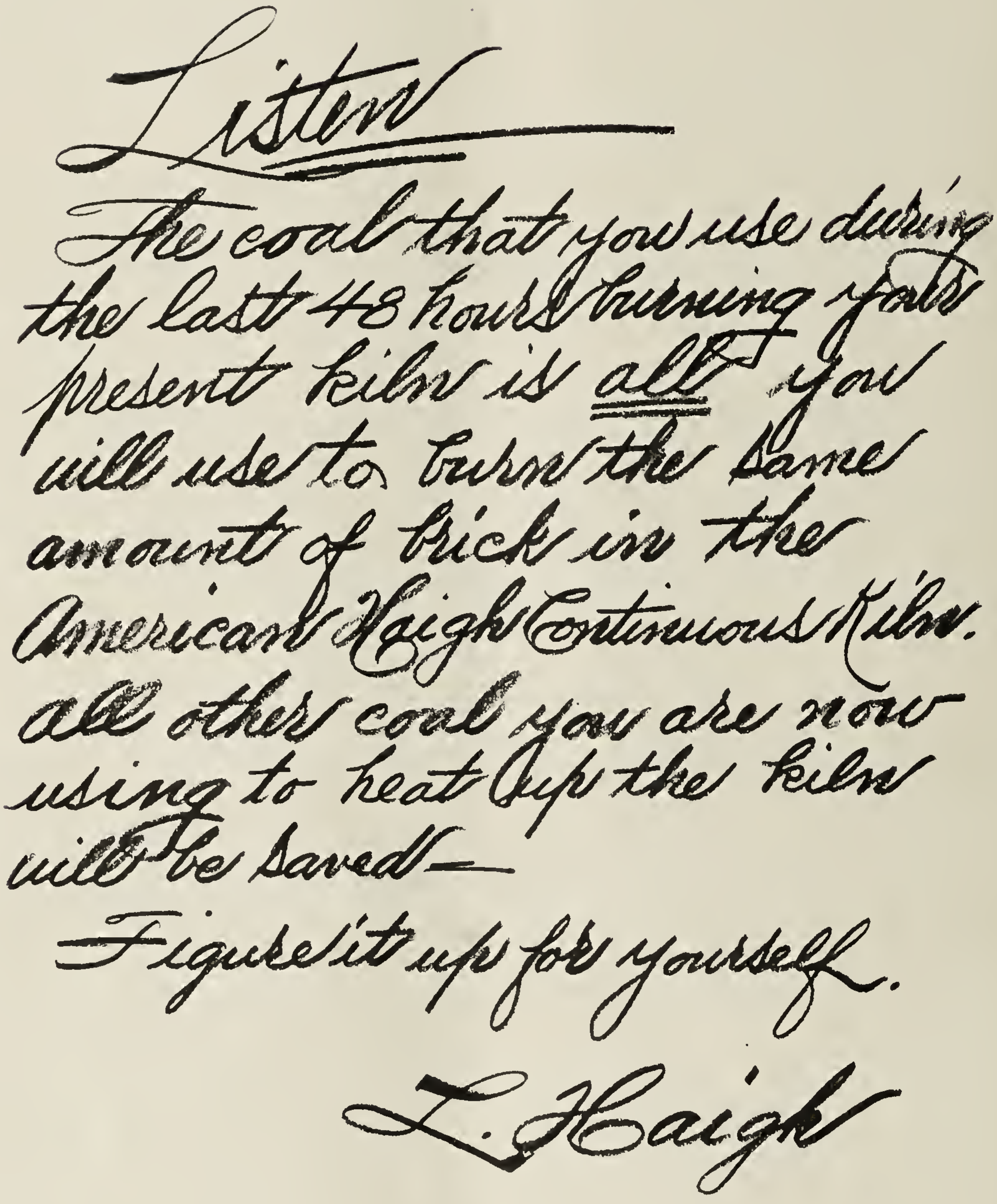
There are some districts in this country where very little trade in brick is being done. The boom in the South, however, is likely to last a few years, for constructional work is much in arrears. The government's new Housing Bill, which arranges a cash subsidy by the State to encourage private building enterprise, is expected to result in considerable new building this fall. South Staffordshire brick manufacturers are turning out a brick that is being used in the trial sections for brick paving with complete success. Birmingham and Staffordshire are using this brick in the trial section roads made with brick for experimental purposes and the municipal engineers are reporting favorably on it.

The shortage of skilled labor in the brick trade is hampering the manufacturers. Much of the best labor in the country's industries in general is leaving monthly for other lands—a goodly percentage of it to the United States. Increased wages for the skilled work in Staffordshire seems to be the only remedy for the present problem of labor.

Scotland Permits Use of Non-Clay Brick

Up in Scotland the Board of Health has caused some concern to brick manufacturers of the old school by the announcement that in the future no discrimination will be made in specifications against "steam-cooked" brick, which means that the use of sand-lime and clinker brick will be permitted as well as clay brick. New plants for "steam-cooked" brick are springing up wherever the demand for the non-clay brick justifies their presence. The clay brick manufacturers are countering the anti-clay brick movement with propaganda setting out lucidly how much safer it is to use brick "hard-burned" instead of "steam-heated" substitutes that very often turn out to be unreliable.

Some very big contracts in railway and engineering schemes have given the brick manufacturers a welcome boost lately. In one extension scheme of the London underground railways 8,000,000 brick have been purchased for use in the construction of viaducts and bridges, which is something like a three years' brick output of the average brick manufacturer there.



Listen

The coal that you use during
the last 48 hours burning your
present kiln is *all* you
will use to burn the same
amount of brick in the
American Haigh Continuous Kiln.
all other coal you are now
using to heat up the kiln
will be saved—

Figure it up for yourself.

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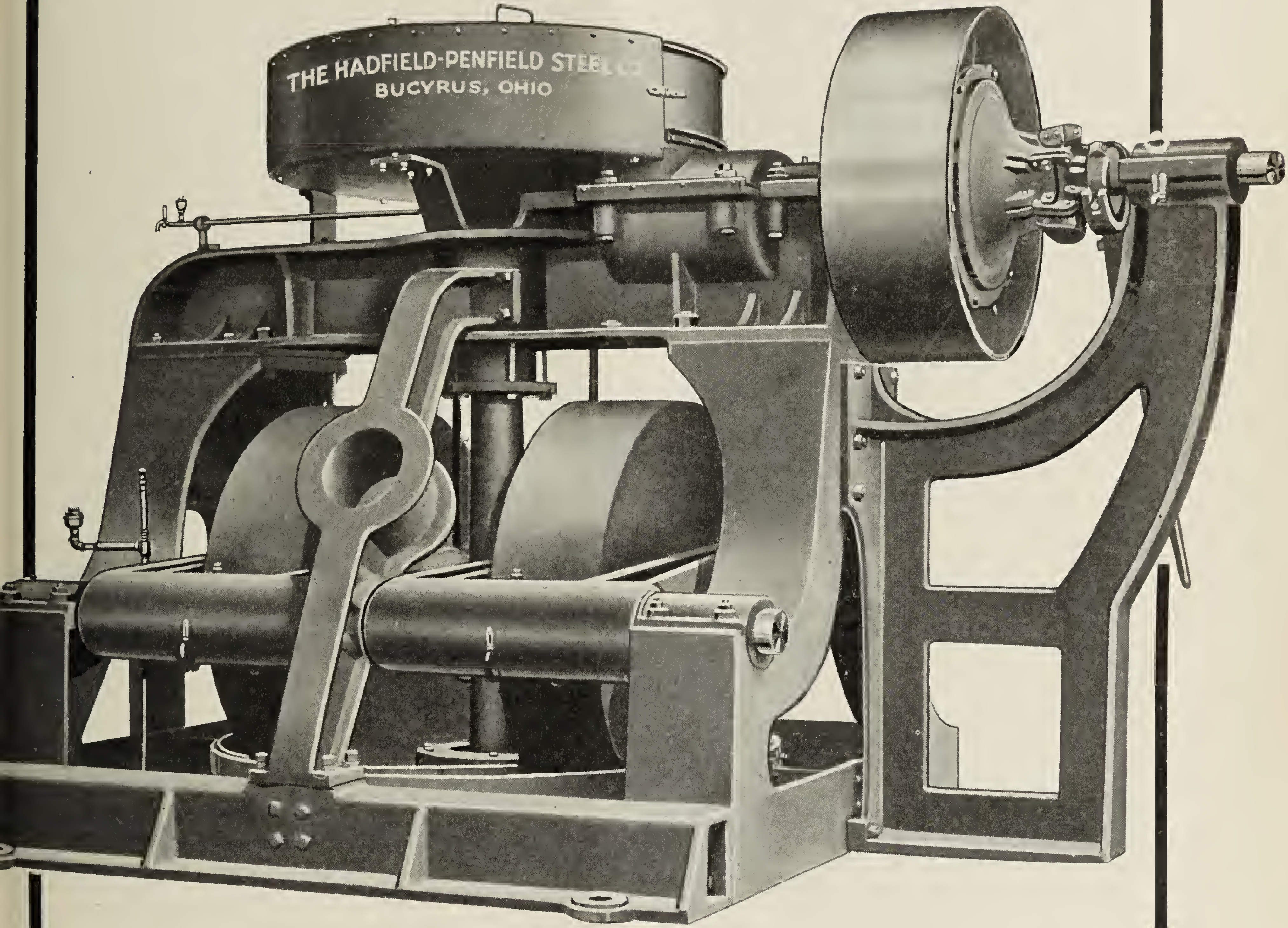
Why Not?



Why not let one American No. 384 Grinder do the work of five dry pans.

Think of the Labor Saved—Power Saved—Room Saved—Repairs Saved.

You can save on cost of production and increase quantity and Quality of Product.

Write for circular No. 384.

We build every appliance needed by Clay Workers.

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BUCYRUS, OHIO

Management and Superintendence

MISUSE OF SPRINGS ON KILN BANDS

Brick plant operators have from time to time recommended the use of car springs on kiln bands, and Brick and Clay Record has on occasion published these recommendations. Various advantages have been pointed out to justify the application of such devices. The reason most often advanced for the use of car springs is that they allow movement and adjustment for the crown while the kiln is under fire, and so reduce the crushing and spalling of the crown brick. Incidentally they also keep the bands from breaking. The springs are supposed to absorb the expansion under rising temperatures and cause the skew line to return to its original position on cooling.

As an illustration of the impracticability of this scheme the case of a copper refining furnace is noted. The use of heavy car springs on the buckstay cross ties was suggested to eliminate crushing and spalling of the roof brick near the skew line. The desired effect, as far as spalling was concerned, was secured, altho on cooling the car springs failed to take up the roof to its original position, and when the furnace was cold the roof fell in. On second trial the roof again fell in, and the car springs were abandoned. The pressure against the springs was, in this case, simply the thrust of a plain arch.

In the case of a kiln crown its domelike construction will hardly permit it to fall in, altho it is readily seen that no springs could be applied heavy enough to follow up the contraction on cooling, and as a result the crown will assume a different shape than was intended in the original design. Finally the crown will settle enough to fill all the adjustment allowed in the spring and the band becomes, in effect, a tight band. The crown being out of shape is more liable to damage from crushing and spalling than ever and its life is seriously affected.

The best method of banding kilns is to use a tight riveted band of sufficient strength to hold the expanding brickwork and the weight of the crown. Spalling and crushing can be reduced to a minimum by careful attention to the design of the crown, and during service by the use of refractory washes to retard vitrification of the brick. But it is imperative that the skew line be held rigidly in place, otherwise the fine points of design will avail nothing.

The only place where springs may be used successfully is in connection with suspended arches such as are used on boiler furnaces. The so-called "floating skew back" eliminates crushing and spalling almost entirely as the give and take expected of the spring feature is really accomplished. However, the reason for its success is that the weight of the roof is not supported by the springs, as is the case with sprung arch roofs and crowns.—E. E. Ayars.

BETTER DOORS MEAN BETTER BURNS

The average kiln door builder gives very little thought to his work and as a consequence the wickets in common use are the cause of high heat losses.

Kiln walls vary in thickness from 24 to 36 inches and are so constructed as to reduce heat losses to a minimum. The thickness of kiln doors is rarely found to be more than 13½ inches, being constructed of a brick and a half, and having a thru joint between every course of brick. On some plants the doors are laid up in clay to estimate the thru points but this is expensive from both the standpoint of labor and material, and the doors are difficult to tear out after the kiln is fired.

Two thin kiln doors present from 50 to 60 square feet of radiation surface with less than half the resistance to the flow of heat found in the kiln walls. The loss of heat in most cases is sufficient to cause the kiln to lag at the doorways and underburned brick are found in the hickeys.

A thicker door will reduce the heat losses to a considerable extent. In some cases the addition of one-half a brick in thickness has made a distinct difference in the burning results obtained in and around the doorway.

In kilns burning to high temperatures double doors are used to advantage. The usual door is erected 1½ brick thick. A coating of clay is plastered on and brushed over smooth with a broom dipped in thin slip. The clay used should be red surface clay. This is cheap and really gives the best results as it does not crack and fall off from the brickwork. When the clay has been applied the second door is built. This is usually one nine inch brick thick, altho 1½ brick may be used. A slight space is left between the two doors.

After the kiln has been fired and the brickwork starts to warm up, a coating of clay is plastered on the outer door and brushed over with slip. The clay will show some small cracks during the course of the burn and it pays to brush the doors with slip at least once a day during the firing period.

The double door may be used in outside flue and stack openings and these should be plastered often during the burn to keep cold air out. The action of the flues will be much more satisfactory if handled in this manner.—E. E. Ayars.

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FOR THE MANUFACTURE OF

Fire brick and shapes from fire clay, magnesite, chrome, and other materials. Regular 9 in. series, large and small 9 in. series, and tile up to 12x24x4 in. The only mechanical press that has been successful in the production of pressed brick and large shapes from dead-burned magnesite.

High-grade smooth face brick, round edge face brick, and rough texture face brick without addition of complicated special attachments or scratching devices, and common building brick, from shale, clay, and other materials.

Write for Bulletin AB and mention this advertisement.

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The Letter Box

A Place Wherein Letters That Have General Interest Are Published and Commented Upon

CORRECTS ERROR REGARDING HEAVY CLAY PRODUCTS RESEARCH

Brick and Clay Record has received a letter from George A. Bole, superintendent of the Ceramic Experiment Station, Bureau of Mines, at Columbus, Ohio, calling attention to a misstatement contained in the September 4 issue in the announcement of the Ceramic Day at the National Chemical Exposition. Brick and Clay Record is very glad to publish Mr. Bole's letter:

"I would like to correct a misstatement which appears on page 320 of the September 4 issue of the Brick and Clay Record under the caption "Make Big Plans for Ceramic Day," which is as follows:

"'Results of the research work done by the Four Heavy Clay Products Associations in cooperation with the United States Bureau of Mines will be discussed. Methods and equipment necessary to effect economy in burning as brought out during the kiln investigation will be demonstrated.'

"The following sentence: 'The research of the Refractory Manufacturers Association will also come in for a share of attention,' is correct.

"I do not know where this information could possibly have originated as the Bureau of Mines was not even approached in regard to a presentation of the Heavy Clay Products Investigations. Either wittingly or unwittingly there has been much pressure brought to bear upon the Bureau to publish the results in part of the Heavy Clay associations' research, but we have always held firmly to the principle that the entire research should be presented in printed form to the members of the cooperating associations before being made available to the general public. It is true that the refractories men have consented to have Mr. Donahoe present in a general way the results obtained in the investigation in cooperation with the Bureau which we much appreciate."

Questions and Answers

Best Authorities in Every Clay Working Branch Are Called Into Consultation—Their Advice Is Free to You, Thru These Columns

Address all communications intended for this department to "Editor Questions and Answers, care of Brick and Clay Record," Chicago

MAY BRICK BE SET WET?

1,073. *Pennsylvania—The manager of this brick plant is desirous of obtaining a production of 50,000 brick per day and, since the plant is not equipped to produce this amount, he has insisted that brick be set in the kilns wet, in order to gain extra time. He is of the opinion that brick can be burned just as well and without harming the product if they are set wet, even tho our kilns show anywhere from 8 to 15 per cent. bats on all varieties of clay. I cannot convince the manager that the wet brick are responsible for this condition and would appreciate it if you could give me some information. Can you tell me whether the best plants in the country will set nearly 40 per cent. wet brick? What will happen in a kiln that is burning 40 per cent. wet brick?*

By all means we agree with you that dry brick only should be sent to the kiln. Any brick containing a certain amount of moisture is a drawback and creates trouble, and greatly

PLANT BETTERMENT SERVICE

A sincere interest in your problem, together with common sense methods and a broad experience makes this service highly profitable.

Write for details

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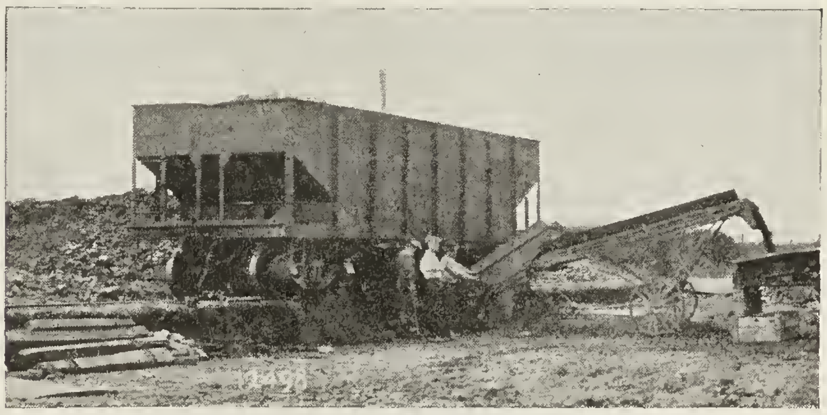

Coal to Unload?

Years ago when labor was plentiful and its cost was low, it didn't mean much to unload a car or two by hand. Today with labor costs sky-high, you've just got to use machinery to do the job and to stay "in the black" on the ledger. One of the best aids on the market is the

ROBBINS PORTABLE CAR UNLOADER

It is designed to solve various unloading conditions and it does it too—does it efficiently and economically for some of the largest Brick, Coal and other Industrial Plants in the country. Our many years of practical experience with material handling problems is at your disposal.

Get the Facts

Let us tell you more about the Robbins Portable Car Unloader—how it works—what it has done for others—what it can do for you. An inquiry implies no obligation. Write us now.

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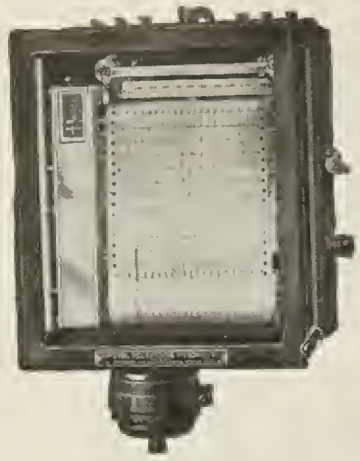

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Determine temperatures in all portions of the kiln. Find out where your fuel is being wasted.

Eliminate underburnt and overburnt ware in parts of the kiln by knowledge of temperatures.

Be sure that knowledge is accurate by installing Bristol Pyrometers.

Ask for 68-page catalog AE-1401.

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WATERBURY, CONNECTICUT

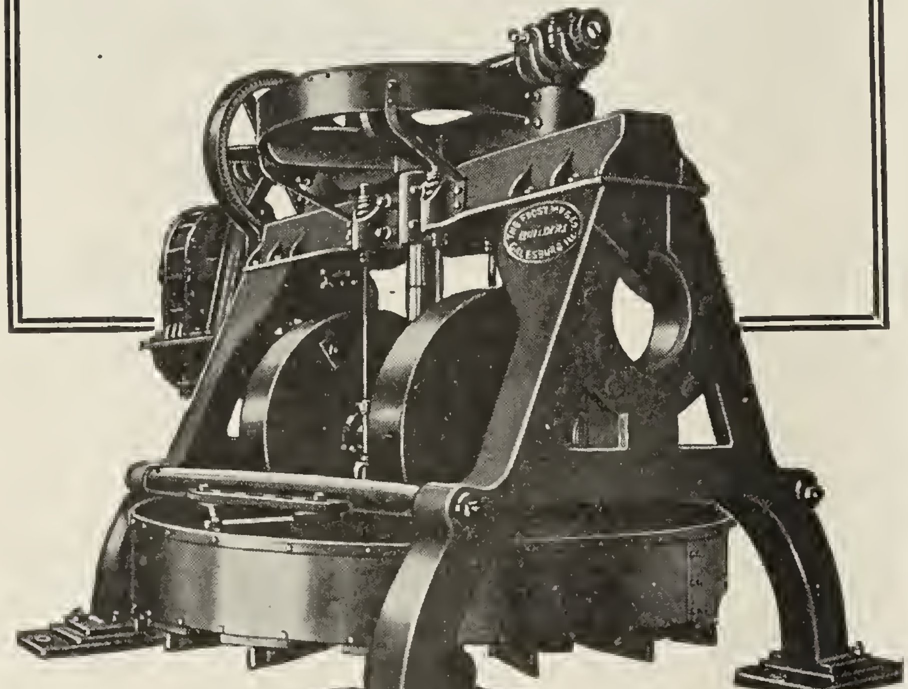
BRISTOL'S

INDICATING RECORDING PYROMETERS

BETTER QUALITY WARE

That is the result when Frost Dry Pans are put on the job.

THE FROST MFG. CO.
GALESBURG, ILLINOIS



QUALITY ECONOMY SERVICE

increases the percentage of broken brick when taken from the kiln.

Our records show that you have a copy of the Clay Products Cyclopedia, which was published by our organization. If you will refer to this volume on Page 178, under Item 386, you will find some very good information on the amount of moisture that must be driven out of any clay ware during the process of burning. You will notice that this item shows that about 8,100 cubic feet of steam must be driven off every ton of clay ware that is perfectly dry when put into the kiln.

If the ware is not as dry as it should be, the amount of moisture or steam that must be driven out is considerably increased and the flues are considerably overloaded. If you use down-draft kilns, this moisture is liable to settle on the lower courses of the brick and cause cracking and other damage to the ware.

At any rate, wet brick causes unnecessary trouble inasmuch as the heat that should be used in watersmoking dries out the outside surface of the wet brick and when the moisture tries to get out from the inside of the brick, the dry part on the outside hinders the passage of moisture and cracking is the result.

We do not see how anyone could think that the best plants in the country burn nearly two-fifths wet brick. As a matter of fact, the best plants dry their brick as thoroly as possible before putting them into the kiln, as it is found that it is far more economical from the fuel standpoint alone to dry the brick in dryers before they go into the kiln. Kilns are not intended to dry brick.

The whole matter comes down to a question of costs. If you had accurate figures showing the actual cost of a thousand good brick under the old conditions and the same basis of cost on a thousand brick under the present system, we know that the additional fuel consumed and the large loss entailed would show that the actual cost of making brick with the increased production that you indicate under present conditions would convince anyone that the brick should be thoroly dry before being put into the kiln.

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

DEATH COMES SUDDENLY TO LONGTON

Isaac Longton, 72 years, who was associated with his son, L. J. Longton, in the manufacture of brick at 35 Wellington street, Worcester, Mass., dropped dead at the plant recently.

DEATH TAKES GUSTAV BISCHOFF

Gustav Bischoff, 70 years old, president of the Whitehall (Ill.) Sewer Pipe & Stoneware Co., the St. Louis Independent Packing Co., and the Manchester Bank, St. Louis, Mo., was buried Friday, August 31, in Bellefontaine Cemetery, St. Louis.

Mr. Bischoff was born in St. Louis and early became identified with meat packing, starting as a meat cutter. The Whitehall Sewer Pipe & Stoneware Co., of which he was head, is one of the largest concerns of its kind in the Central West.

DR. DEMUTH'S SON DIES

James Clifford Demuth, seven-year-old son of Mr. and Mrs. William F. DeMuth, president of the Canton (Ohio) Brick & Fireproofing Co., is dead as the result of burns received when a blazing can of oil he had ignited with a match caught his clothing afire. The sympathy of their friends in the clay industry is with Mr. and Mrs. Demuth in their bereavement.

C. E. POSTON TURNS PLANT OVER TO SONS

C. E. Poston of the Poston Brick Co. at Attica, Ind., has turned over the plant to his sons, who have formed the Poston-Herron Brick Co. and will operate the business. The business is unencumbered and in a prosperous condition and the new owners hope, by following the business methods of the donor, to maintain the popularity which Poston brick has always enjoyed.

STRING LEAVES HYDRAULIC-PRESS

Samuel W. String for ten years connected with the Philadelphia office of the Hydraulic-Press Brick Co. has severed his connection with that company and organized the S. W. String Co. with offices in the Flanders Bldg., Philadelphia, Pa. Associated with him are James M. Hamilton and Charles A. Bothell. The new company is handling the accounts of a number of large face brick and hollow tile manufacturers.

RIDDLE TO PRESENT PAPER IN EUROPE

Frank H. Riddle, director of research of the Champion Porcelain Co., Detroit, Mich., will sail for France the latter part of September to present a paper for the International Conference on Insulators to be held in Paris on October 8. The subject of this paper is the Relation Between the Composition, the Micro Structure and the Physical Properties of Porcelain. Mr. Riddle is going over in the interests of the Champion Porcelain Co. and the Jeffery Dewitt Insulator Co. While there he will do some advisory work for the Compagnie General D'Electro Ceramique, one of the largest ceramic manufacturers in France.

PROVIDES THRILLS FOR CROWD

John L. Salway, superintendent of the Corinth (Miss.) Brick Co. and Roscoe Turner recently provided some exciting entertainment for the citizens of Corinth. Both Mr. Salway and Mr. Turner are expert aviators and did some remarkable stunts while flying over the city on Labor Day. Mr. Turner walked out onto the wings of the plane and did other daring things, while Mr. Salway was guiding it. Both of them were flying officers in the World War, Mr. Salway having been with the Royal Flying Corps. Mr. Salway is a man of considerable experience in the clay industry and his specialty is making sick plants well.

D. S. PAYNE SEVERELY INJURED

D. S. Payne, superintendent and manager of the Egg Harbor (N. J.) Brick Co. has recently met with a painful and serious accident which very nearly resulted fatally. Mr. Payne was riding on a load of clay being hauled to the clay room by a gasoline locomotive, when the locomotive left the trestle—about 20 feet high—at the entrance of the plant. Mr. Payne was thrown off the trestle with the train into a pile of old machinery. His right leg was fractured above the knee, and his left ankle badly crushed, all ribs on one side broken and the breast bone severely crushed. Mr. Payne was placed in a plaster of Paris cast and will probably be an inmate of the Atlantic City Hospital for six or eight weeks.

DR. MARS RETURNS FROM ITALY

Dr. G. C. Mars, Director of Service of the American Face Brick Association, returned recently from an extended trip thru Italy, made in behalf of the Association. Inspection of many interesting and historical parts of Italy was included in his visit to 44 centers from Sicily to the northern part of Italy, and a great wealth of material was obtained for associa-

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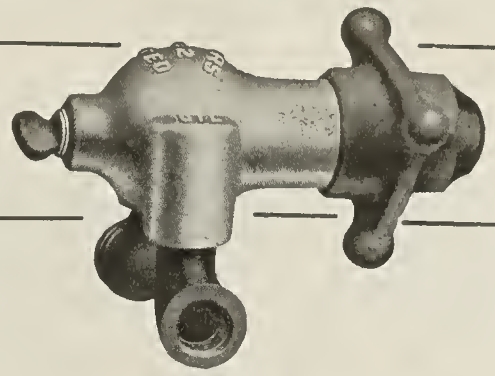

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It wont cost you to get complete information today and it may mean profit for you. It has to many others.

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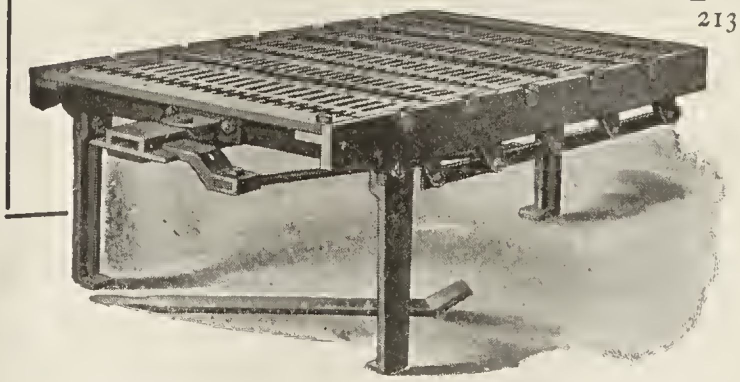

The Canton Grate Co.
1709 Dillon Place, CANTON, O.

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The American Blower Company offers the cooperation of a competent Engineering department in the solution of any problem along the following lines:

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American Blower service and mechanical equipment represents the development of forty successful years. Write for descriptive Bulletins.

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EXHAUSTERS · VENTILATING FANS · AIR WASHERS · BLOWERS · ENGINES
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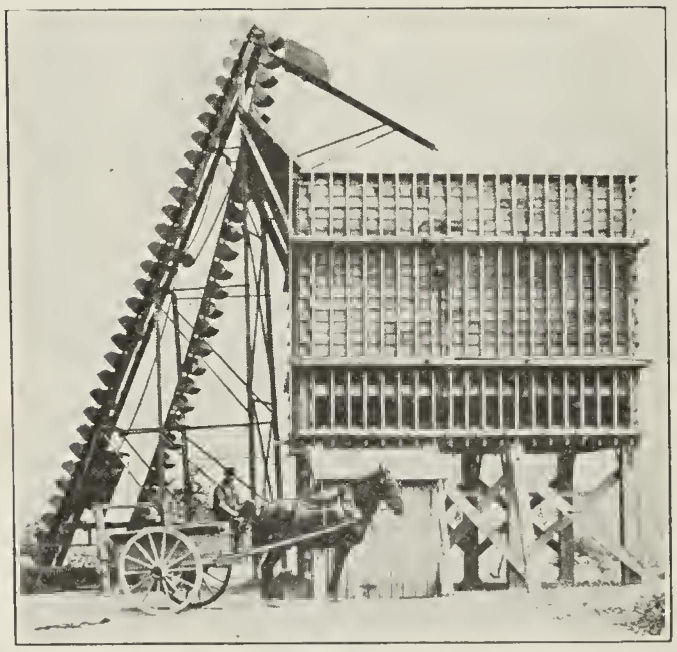


A Fairfield on the Job!

Fairfield Coal Handling Machinery is preferred by clay products manufacturers everywhere, because it is *dependable* and *economical.*

Write for Bulletin No. 20

The Fairfield Engineering Co.
Marion, Ohio

tion purposes. A large collection of excellent photographs of brick work in Italy was brought back by Dr. Mars, among which are several interesting examples of brick work of the twelfth and thirteenth centuries. An excellent trip is reported by Dr. Mars.

NEW PLANT FOR HARBISON-WALKER

The Harbison-Walker Refractories Co. will soon begin work at Bessemer, Ala., on a $600,000 plant for the manufacture of refractory products, it is said. This will be the largest plant of its kind in the South when completed.

Recently Harbison-Walker purchased a tract of land for the site of its new plant at Bessemer consisting of ten city blocks. A large crew of men is grading and macadamising the street which borders the property on the east.

The survey of the property will begin at once and within a few days construction work will commence on the buildings. Several railroad sidings will be built into the property. The property is convenient to several lines of railroad and the spur tracks can be built at small cost. When in full operation it is expected this plant will employ 300 men.

ALABAMA COMPANY REBUILDING PLANT

Plans are now being made by the Alabama Clay Products Co. for general revision of the Bessemer Plant. These plants are necessary to double the capacity in order to take care of the steadily increasing demand for the company's Excelsior fire brick.

Among other changes, the plans call for elimination of the steam power plant, which is to be replaced by individual electric motor drives. Also elimination of one of the steam driers now in operation and the installation of a waste-heat drying method. This to be connected from nine of the present 14 kilns into the large fire brick dryer formerly heated by steam.

These changes and additions will result in a complete and thoroly modern fire brick plant, will double the capacity, materially increase the quality of the brick and also decrease the cost of production.

STORM DAMAGES BRICK PLANT

In a severe storm which swept Mansfield, Ark., recently, the Choctow Brick & Gas Co. sustained the heaviest loss, which will reach several thousand dollars.

REBUILT PLANT NOW READY

The American Vitrified Products Co., has announced the new plant which it is building to replace the one destroyed by fire last March will be completed and in operation by November.

The plant will make a clay ring called "hot top" for steel ingot molds and will be equipped to turn out an unlimited number of them.

VENTURA GETS A BRICK PLANT

The Chamber of Commerce of Ventura, Cal., has at last secured the location of a brick plant at that place for the production of ordinary brick, hollow tile and pipe. As Ventura has, besides the clays, an abundance of crude oil, natural gas, and convenient water shipping facilities, the enterprise, from the standpoint of production can hardly be considered an experiment. Years ago, Ventura had a small yard supplying local demands.

LOS ANGELES PLANTS STILL AT PEAK

Apparently there is no slackening of building activities in Los Angeles, Cal. Lee S. Collins of the Los Angeles Brick Co. says: "Building conditions here are especially fine. The building permits for August will no doubt surpass any month this city has ever known, probably running close to $25,000,000. Our company has experienced for August the biggest month in the history of its business. All of which will signify that the city is going and growing at the same old pace. The Biltmore Hotel people have just let the contract for a three million addition to their building—this before the opening of their new hotel, which does not occur until October." The Biltmore Hotel structure which is now being completed is practically an all clay products building, as has previously been mentioned in Brick and Clay Record. The new addition will be in keeping with the structure now being built. This is of interest, especially to the common brick manufacturers who are planning to make a trip out west on the occasion of the Common Brick Manufacturers' Association Convention in February.

JEWETT PLANT BUILDING MORE KILNS

The Jewett Fire Brick Co. at Canon City, Colo., is making extended improvements to its plant. A new 30 foot downdraft kiln has just been completed and the company will build three more just as soon as possible. Business has been highly satisfactory thruout the year.

MEET THE PROGRESSIVE CLAY MEN

When the merchants and manufacturers of Denver, Colo., decided that it was their duty to go out on the western end of Colorado and visit the business men located there, 73 business houses signified their willingness to join the venture. Among the progressive merchants were, Wm. F. Ervin of the Denver Pressed Brick Co., Oscar Temple of the Denver Sewer Pipe & Clay Co., D. C. McElhinney of the McElhinney Tile & Marble Co., and John Fackt of the Denver Terra Cotta Works. New friends, new orders and a promise of repeat orders was their award.

CARBO BRICK CO. FINANCIAL REPORT

William S. Hyde, receiver for the Carbo Brick Co., of Berlin, Conn., has submitted his semi-annual report on the operation of the company, in which he reports paying off a $4,000 mortgage, $7,437.07 in cash on hand, $5,936.28 cash receivable, brick on hand valued at $19,610, a total of $32,983.30. Against this is a total payable of $24,534.72.

TAKES OVER LAUREL, CONN., PLANT

The Builders' Brick Co. of New Haven, Conn., has taken over the brick works at Laurel, on the Connecticut River and plans to produce about 30,000 brick per day at the new plant. Judge John O. Shares of Hamden, Conn., is president of the Builders' company; William C. Perkins, formerly of the Winchester Repeating Arms Co., is treasurer, and Capt. Charles W. Watson is production manager. Brick will be shipped by boat and rail from the Laurel yards.

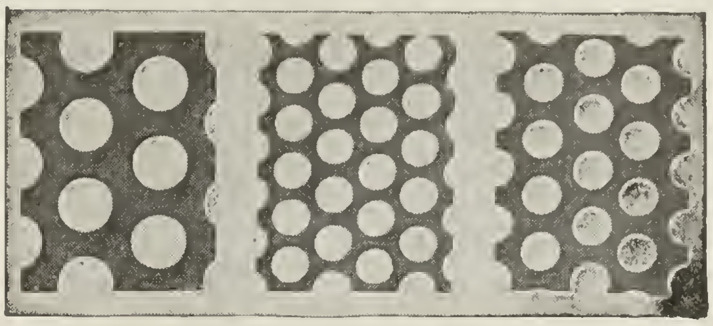
MACHINE TO SUPPLANT HAND LABOR

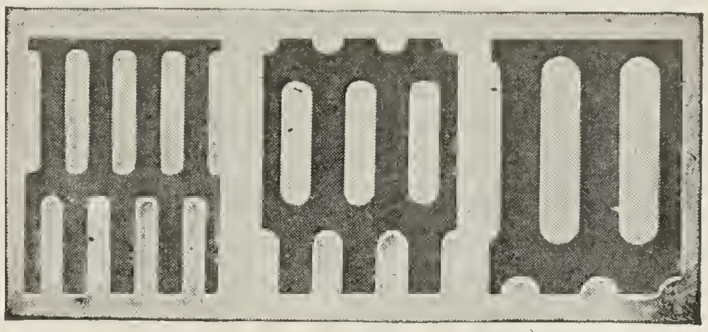
Edward W. Mack & Son, brick manufacturers, of Windsor, Conn., are enlarging their brick plant on Bloomfield street and will double the capacity of the present plant. Heretofore, only hand-made brick have been turned out but machinery will be purchased and machine-made brick will also be manufactured. The company has been in operation nearly a century.

TO MAKE PRODUCTS FROM CLAY

Commercial development of the discoveries of Professor George W. Carver, a well-known negro educator of the South who is connected with Tuskegee (Ala.) Institute and who has developed numerous commercial uses for southern produced clays, will be undertaken by a company formed recently in

Perforated Steel Screens





For Screening Clay, Shale, Sand, Gravel, Stone and Cement

All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

Sheets furnished flat or rolled to shape for revolving screens.

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OXIDE MANGANESE

Powdered—Granular
For Speckled Effects

PRECIPITATE

CARBONATE BARIUM

For Prevention of Scum
Thereby Producing
Deeper and Richer
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ROESSLER & HASSLACHER
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Chicago Trenton Kansas City
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NATIONAL MANGANESE
Gives Diversity to Face Brick

Meet the demand of the building public today for varicolored brick.

NATIONAL MANGANESE enables you to
- —make high-priced French Grays out of light-burning and buff brick.
- —produce novel speckled effects.
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Miners and Grinders for More than a Quarter Century

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AUTOMATIC CAR UNLOADER

Loads or unloads coal at the rate of 30 to 50 tons every hour. Only one man needed.

Let us tell you what other clay plant operators are doing with the Sunbury in saving time, money, and labor.

The Sunbury Manufacturing Co.
Sunbury, Ohio

Atlanta by a group of well-known business men under the name of the Carver Products Co., having an initial capital stock of $125,000. Among those affiliated with the enterprise are C. A. Wickersham, president of the Atlanta and West Point Railway Co., and Hugh M. Dorsey, former governor of Georgia. Patents have been applied for at Washington on various processes and discoveries of Professor Carver, one of the most important of which is the manufacture of paint from common red clay found in Georgia. Other and important commercial uses of clay also have been discovered by Professor Carver, who is not only internationally known in the realm of science, but who holds a fellowship in the Royal Society of Great Britain for some of his scientific discoveries.

PURINGTON AGAIN SHIPPING MANY BRICK

Shipments from the Purington Paving Brick Co. plant at Galesburg, Ill., are rapidly swinging into the fall peak as building operations thruout the middle west progress. Orders have been held in recent weeks until at one time nearly 30,000,000 brick were on hand. The heaviest shipments of the year will probably come in the next three months.

HAEGER HAS NEW PRODUCT

The Haeger Brick & Tile Co., Aurora, Ill., has placed a new building tile on the market. This tile is really a building brick designed to compete with wood in building construction. It is 8 by 3½ inches. There are three air spaces in each brick, making the brick so light that it is said to be cheaper to handle than ordinary brick and on account of its size a wall of this material can be laid in less time than ordinary brick. The air spaces also give protection against both heat and cold. The face of the brick has a rug finish and it may be had in various tints from seal brown to buff.

USE MANY BRICK IN STRAUS BLDG.

Brick orders for the new $15,000 Straus Building being erected in Chicago, total close to 4,000,000 brick. This structure, the future home of S. W. Straus & Co., investment bankers, will be 22 stories in height, with an additional ten story tower, making the highest office building on Michigan Avenue.

For the south and west sides of the building 500,000 Kittaning face brick will be used; for the interior court, which will be entirely surrounded by offices, a dipped white enameled brick was selected. In all there will be 260,000 of these dipped enameled brick. To back up the other brick used. 3,010,000 common and hollow brick are specified in the contracts. 19,000 paving brick are to be used in backing up the parapet. Other clay product contracts include 350 tons of terra cotta, 750,000 square feet of tile for partitions and 490,000 square feet of 14 inch tile arches for the floor system.

The main shaft of the new building will be 22 stories in height, and will, according to S. J. T. Straus, senior vice-president of S. W. Straus & Co., carry a ten-story tower on the Michigan Avenue side of the building, extending to the limit allowed.

HAS RECORD MONTH IN AUGUST

The Louisville (Ky.) Fire Brick Works, according to W. E. Gifford, sales manager, broke all previous records for a single month's business in August. Much new business was booked, and during a month when manufacturing departments were generally crowded along to keep up with demand. A considerable amount of new business has been booked since September 1. Mr. Gifford stated that the company was making a harder drive to put new customers on its books than at any previous time, and was getting some excellent results.

Use
SMOKELESS
Oil Burners

FOR

1. Economy in the amount of both *oil* and *steam.*
2. Improved quality of products burned.
3. Minimum labor because of their simple and perfect control.
4. And further because in buying a Smokeless System you are buying the Acme of High Standard Equipment that can be seen in successful operation all over the country.

THE SMOKELESS OIL BURNER CO.

BUCYRUS, OHIO

Complete Oil Burning Systems

Made for maximum service not merely the average

TRADE JENKINS MARK

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Pump Valves exactly suited to your requirements

Pure rubber of the best quality is used in Jenkins Pump Valves. It is compounded with ingredients so selected that each resulting composition is fitted exactly for some special requirement.

Choose your pump valves correctly to obtain maximum service. Among the most commonly used Jenkins Pump Valves are:

No. 80—For hot water, above 180°.
No. 93—For hot water, below 180°.
No. 94—For cold water.

Other compounds are furnished for special service.

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Always marked with the "Diamond"

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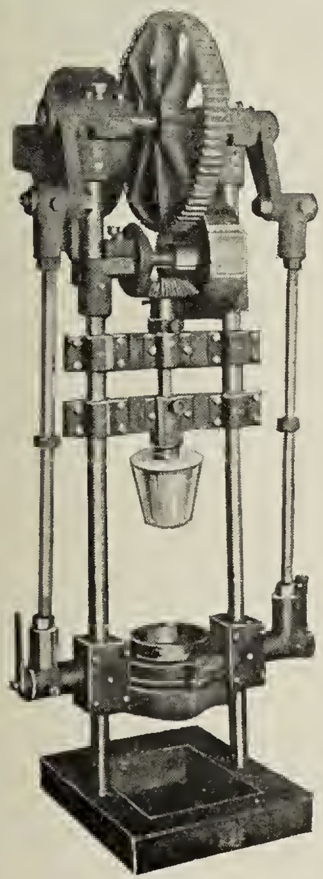

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Install a Hilfinger and capitalize on improved methods, assured by thirty years of actual demonstrations.

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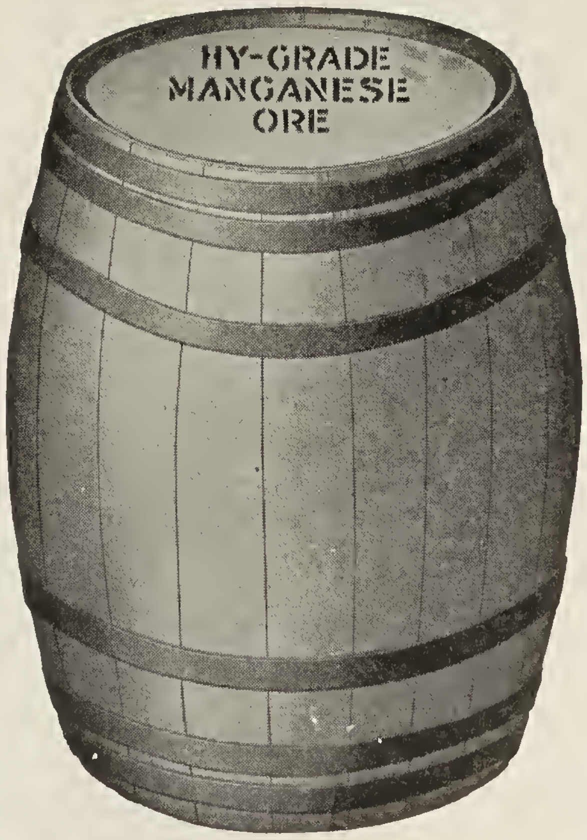
"HILFINGER"
POT MACHINE



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WOODSTOCK, VA.

Miner and Grinders

Especially Prepared for Brick Making

Announcement

The American Dressler Tunnel Kilns, Inc., will have a message for the clay products industry in the near future which will be of considerable interest.

The message will appear in this paper at the earliest possible moment. In the meantime we are, as usual, ready to serve you.

American Dressler Tunnel Kilns, Inc.
1740 East 12th St. CLEVELAND

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CLAY MACHINERY

ROBINSON equipment includes everything for the clay plant.

See Our Catalog in the Clay Products Cyclopedia

We manufacture the Lakewood Dryer and Transfer cars, the Richardson double Die Steam Repress and the Pittsburgh Hot Air Dryer, mine cars and barrows.

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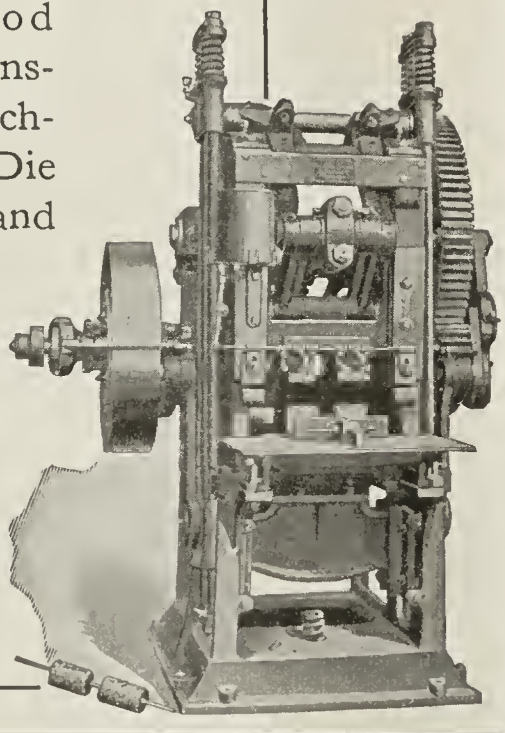


FILES $35,000 DAMAGE SUIT

The P. Bannon Pipe Co., Louisville, Ky., which on July 30, filed suits against the Pennsylvania R. R. System and subsidiaries, naming the Pittsburgh, Cincinnati, Chicago & St. Louis R. R. and Louisville Bridge Co., has filed additional counts against the Pennsylvania Railroad, the Louisville Bridge, Terminal R. R., and Louisville Bridge & Terminal Co., to be sure of having properly filed its $35,000 suit for damages to plant, and loss of products; and $5,000 for interruption of business, caused by fire, said to have started from sparks from a passing locomotive.

FORM COMPANY IN BALTIMORE

The Elk River Clay Products Co., of 1137 Calvert Building., Baltimore, Md., has been chartered by Frank Roland Hansell, John Vernon Pimm, and Francis Leonard Schmidt with a capital of $30,000.

BUYS BRICK PLANT SITE IN MARYLAND

The Eastern Sewer Pipe & Brick Co., which is capitalized for $350,000, has purchased the C. E. Locke farm, on Opequon River near Stone Bridge, Md., for $16,300, a report states. It is said the company will erect a plant with a daily capacity of 150,000 building brick.

TURN FROM COMMON TO FACE BRICK

Victor Cushwa & Sons, of Hagerstown, Md., for many years have operated a brick plant at Union Court, Md., and manufactured common brick. Profits in this business were meager, however, and the company finally became dissatisfied. Accordingly, last year two of the best ceramic engineers in the country were employed at considerable cost and these men investigated all the possibilities of the company's clay deposits and plant.

According to Victor Cushwa these ceramic men "after an exhaustive investigation, advised us that we had some of the best shale on the Atlantic coast; this was 'backed up' by government experts with the result that we spent considerable money on up-to-date machinery and are now manufacturing rough texture brick, and selling them to New York, Boston, Philadelphia, Baltimore, Washington and other eastern cities. While we have always been 'sold up' it is our intention to spend more money, enlarging our plant still further, and to push the business with the usual Cushwa pep."

FORM COMPANY IN NEW ENGLAND

C. O. Dawes and C. J. Branchfield of Boston, Mass., have announced the formation of the New England Clay Products Co. at 185 Devonshire St., Boston. This company is composed of men who have been engaged in the sale of clay products thruout New England for many years. The company is formed on a policy of 100 per cent. dealer distribution. Sewer pipe, wall coping, flue lining, fire brick, fire clay and stove pipe will be manufactured.

WANTS CLAY LANDS FOR SCHOOLHOUSE

The city of Chicopee, Mass., is negotiating with the D. J. Curtis Brick Corporation for the purchase of two acres of its land on Hampden street as a site for a school-house.

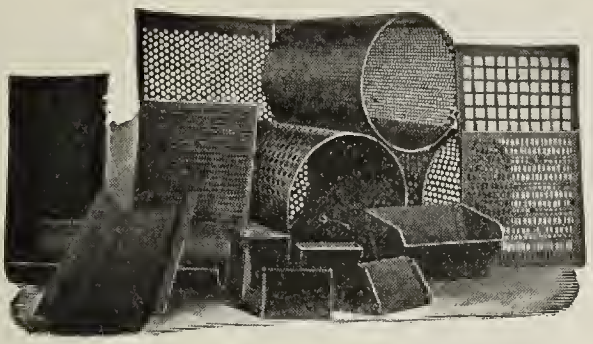
BUILDING PLANT AT WINDSOR LOCKS

Recently incorporated with a capital of $25,000, the Windsor Locks (Mass.) Brick Co. is completing a brick manufacturing plant in North street, where the clay deposits are considered suitable for the business.

CORINTH, MISS., PUSHING BRICK PLANT

From down south comes the report that business men of Corinth, Miss., are furnishing the capital and organizing a

HENDRICK SCREENS
FOR ALL PURPOSES



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STACKS, TANKS,
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LIGHT AND HEAVY STEEL
PLATE CONSTRUCTION

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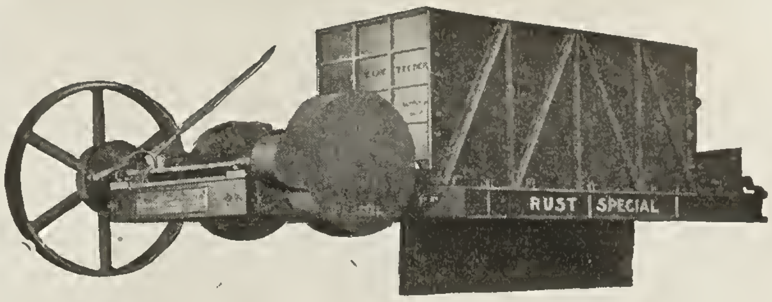

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"RUST SPECIAL"
Feeder and Mixer

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Send for catalog describing Rust Feeder and full line of Marion clay plant equipment.

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Tunnel Kilns.
Periodic or Compartment Kilns.
Insulation of Existing or New Kilns.
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New Plants and Re-Conditioning of Old Plants.
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VEELOS

Genuine Balata Belting

When you do just what another does and as well as he does it, you have many peers, but the minute you do ordinary work just a little better than others do it, or do difficult work with unusual ease or excellence, you are different. Your value jumps. VEELOS Genuine Balata Belts do the regular work in a better way,—and hard work they do unusually well. They are built for it.

The Standard Belt of the World

MANHEIM MANUFACTURING & BELTING CO.
MANHEIM, PA.

IN EVERY BRANCH of CLAY PRODUCTS MANUFACTURE STEVENSON'S EQUIPMENT CUTS THE COSTS

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Western Sales & Engr. Office
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- Dry Pans
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- Roll Crushers
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- Bucket Elevators
- Gravity Elevators
- Brick Barrows
- Tile Barrows
- Sewer-Pipe Barrows
- Gigs,
- Etc.

STEVENSON

new brick concern in that city, with a total investment of $40,000. The company will make both common and face brick. C. L. Archer is named as head of the new concern. The plan calls for the building of a plant equipped with modern machinery to have a capacity of six million brick per year.

OPEN FIRE CLAY MINE AT SALEM, MO.

The fire clay bank near the Rueppl̈e iron mine, Salem, Mo., has been leased by J. F. Shiel to E. Williams of St. Louis, Mo. There are about 16 acres of the clay and work is to start, mining and shipping, within a short time.

HYDRAULIC DECLARES DIVIDEND

The board of directors of the Hydraulic-Press Brick Co., St. Louis, Mo., on August 31 declared two dividends of one per cent. each or $1 per share. The first was payable September 1 and second on October 1.

FULTON ENTERTAINS TOWNSPEOPLE

An "At Home" given by the management of the Fulton (Mo.) Fire Brick Co. recently for the citizens of that town was one of the largest and most unique social events of the early fall season in Fulton, as it was held at the plant and an opportunity was given to hundreds of people of the town to inspect the plant, which has recently been greatly improved and enlarged. A feature of the evening's entertainment was a dance on the concrete floor of the large drying room, which has just been completed at a cost of $20,000, the company furnishing an orchestra for the occasion. The visitors also were permitted to inspect all of the other divisions of the plant, including the kilns, many of which had fires in them that night and proved a spectacular sight for many of the visitors, who were making their first trip to the plant. Officials and employes of the firm acted as guides and piloted the visitors to all parts of the plant.

DRY AGENTS HACK BRICK TO CATCH BOOTLEGGERS

On complaint of the officials of the Sayre & Fischer Co., Sayreville, N. J., that bootleggers were supplying their laborers with Jamaica ginger as a substitute for "hooch," government dry agents raided half a dozen groceries and "cleaned up" the town. In order to get the necessary evidence, the government agents worked for ten days in the brick plant.

RAISES CAPITAL TO $75,000

According to a report, the Mohawk Brick Co. of Mechanicsville, N. Y., has increased its capital from $20,000 to $75,000.

PLANT AT GLOUSTER OPENS

The Glouster, Ohio, brick plant, which has been idle for many months, has reopened and now employs 75 men.

GRAHAM MAY BUILD NEW PLANT

Erection of a modern steel and concrete building to replace its present plant is under contemplation by the Graham Clay Products Co., Conneaut, Ohio. The company, of which H. A. Hall is manager, will tear down its present structure, it is understood.

SAVE BRICK PLANT FROM FLAMES

Prompt action of employes of the Massillon (Ohio) Stone & Firebrick Co. saved the company's plant from serious damage from fire recently, according to T. C. Eayrs, general manager. Heat from an open door in one of the kilns ignited the wood part of the fan house shortly after closing time Friday. Employes seeing the blaze returned to the plant and subdued the fire. Loss is estimated at $1,000.

A PREVENTIVE

Supply your men with Des Moines Glove Co. Hand Pads and prevent dissatisfaction resulting from unpleasant working conditions.

No. 305
$4.25 per Doz.
$48 per Gross Pair

Men can't work efficiently with sore hands. Make working conditions more agreeable around your plant and watch dissatisfaction vanish and labor turnover decrease.

DES MOINES GLOVE
& MANUFACTURING CO.
DES MOINES, IOWA

No. 300, $7.80 per doz. $90 per Gross Pair

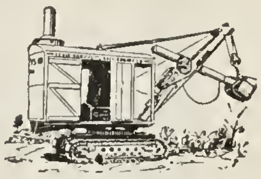
FREE

To any manufacturer whose men have not been using Des Moines Hand Pads who will clip out the Hand Pad shown here and mail it to, us with his letterhead we will send FREE a pair of Des Moines Pads.

"WITH ONE MAN and one ERIE Shovel, we easily get our 300 cubic yards per day. This is sufficient to take care of the daily output at each of our 3 plants, but we could easily increase this output if necessary. In our opinion, the ERIE is *the* shovel."—*Edw. T. Conley, Sec'y, Bradford Brick and Tile Co., Bradford, Pa.* (Owners of 3 ERIES.)

For larger output than the above—500 to 600 cubic yards per day, or more—it is advisable to use two men on the shovel. But when your plant requirements are not too great an ERIE and one man will serve.

We will be glad to send you data showing just what you can do with the ERIE. Write us.



ERIE Shovels can be had with broad tired traction wheels, standard gauge car wheels, or on ERIE lubricated caterpillar type mounting. All interchangeable on the same truck frame.

ERIE STEAM SHOVEL CO.
Formerly Ball Engine Co.,
Erie, Pa., U. S. A.

Builders of ERIE Steam Shovels and Locomotive Cranes

ERIE Revolving Shovels ERIE Steam Shovel Co

Osgood

Again Steps Forward

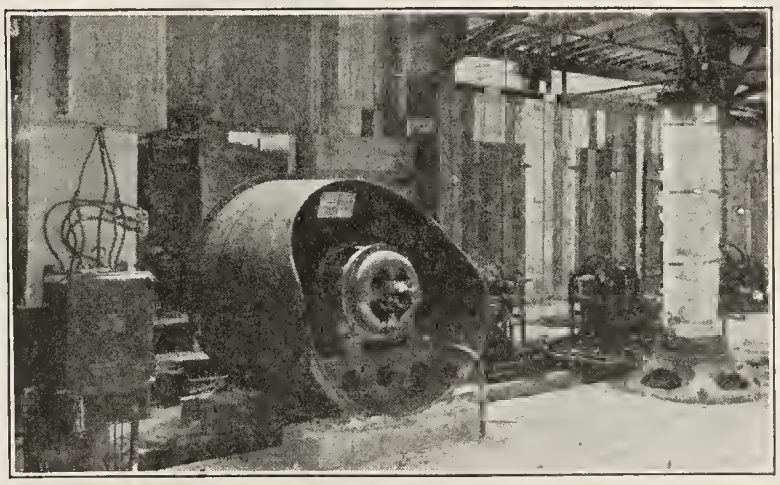
to meet the demand for a Revolving Steam Shovel of greater capacity. The new Osgood 1¼-yd. Heavy Duty now on the market meets this demand. Designed for Heavy Duty work, yet so constructed that speed, simplicity and ease of operation are in no way impaired. This machine must be seen to be fully appreciated.

Ask for Bulletin 236.

¾—1—1¼ yd. Revolving Steam Shovels, Clamshells and Draglines, 1½ to 6 yd. Railroad Type Steam Shovels

The OSGOOD Company
Marion, Ohio, U. S. A.

Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

Ask for information regarding T-J System of Burning Oil.

Tate-Jones & Co. inc.

Furnace Engineers Established 1898

PITTSBURGH, PA.

New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis

"Inexpensive To Operate" *and* "Does The Work"—

Read one of many comments from users of the Bay City Excavator—The Mohawk Brick Co., Mechanicsville, New York:

"We are very well pleased with the Bay City Excavator. It is inexpensive to operate and does all the work we want it to do. If this machine had not been installed this spring we would have had trouble digging our clay due to present labor conditions.

"We recommend the machine, the manufacturers, and their method of doing business."

Send for details.

THE BAY CITY DREDGE WORKS
BAY CITY, MICHIGAN

GEARS

SMOOTH running; correct in design, accurate and true to pitch, Caldwell gears are bound to please you. We make all types—machine-molded, cut tooth, mortise gears, worm gears, etc. Caldwell Promptness is Traditional. It is at your service. Our stocks assure prompt shipment.

Let us figure with you next time you are in the market.

H. W. CALDWELL & SON CO. LINK-BELT COMPANY, OWNER
Dallas, Texas, 709 Main Street—Chicago, 17th Street and Western Ave.
New York, Woolworth Bldg.

CALDWELL

DISMISS RECEIVERSHIP SUIT

The receivership proceedings started against the Columbus (Ohio) Brick & Terra Cotta Co., which operates a plant at Union Furnace, Ohio, has been dismissed by the court of Hocking County at Logan and W. T. Matthews as head of the concern is going on with his work of remodeling the plant. Manufacture of face brick is going on and some shipping is done. Additional machinery will be installed and the output will gradually be increased.

CONTINENTAL SHUTS DOWN TWO PLANTS

The Continental Clay Co., of Columbus, Ohio, which has four clay products plants in the Canton district of Ohio has closed down the two plants at East Greenville for repairs. Minor repairs have also been made at other plants, and it is planned to have all four ready for intensive operations the latter part of September. The other two plants are located at Warmington and Salineville, Ohio. For the time being no change in the product of any of the plants will be made but later on it is planned to change the output of the East Greenville plants from hollow tile to fire proofing and division tile. The plant at Salineville manufactures glazed 8x8x16 hollow tile and the plant at Warmington rough texture face and common brick.

OPERATE DOLLINGS CLAY PLANTS

Receivers Samuel A. Kinnear and Arthur M. Crumrine of the Franklin Brick & Tile Co., of Columbus, Ohio, and the Burton-Townsend Co., of Zanesville, Ohio, which were subsidiaries of the R. L. Dollings Co., are now operating both plants. Inventories of the two plants have been completed. The Franklin Brick & Tile Co. plant was appraised at $653,000 and is capitalized at $1,000,000, with some debts. The plant of the Burton-Townsend Co., consisting of two separate plants at Zanesville, has been appraised at more than $1,000,000 and is capitalized at $2,250,000. This plant is in excellent physical condition and is being operated with a full force of men. The receivers and the court have received several offers to take over the two plants but none was seriously considered. It is believed that steps will be taken to sell the plants at receivers' sale about the first of the year.

OHIO STATE PLANT GROWING

The Ohio State brick plant, located at Junction City, Ohio, is now one of the largest brick plants of the state of Ohio. During the past two years, under the supervision of Theodore A. Young, the plant has added to its equipment 15 tunnels to its dryer, built seven new kilns, installed a waste-heat system, one Stevenson dry pan, a Meco roll crusher, automatic feed and clay conveyors, built a large power house, housing two new boilers and a 500 horsepower Corliss engine.

This plant leads all the other institutions of the state in revenue during the year 1923, whereas in other years it was operated at a loss. Mr. Young's policy of quality of product with maximum production is responsible for this growth. The plant is now making 75,000 brick daily. 200 men from the Ohio penitentiary are employed at the plant, and all labor is performed by these men.

TO BUILD PLANT AT NEW HOPE, PA.

After a period of 11 years since the site was first purchased, a brick plant is to be built at New Hope, Pa. The property was purchased in 1912 but was never developed because sufficient capital could not be obtained. A new company has now been organized which is known as the New Hope Brick Co. Officers of this new corporation are, Joseph L. Harvey, president, formerly of Bellefonte, Pa.; C. H. Bressley of Lock Haven, Pa., vice-president; O. S. Kelsey of Lock Haven, secretary and treasurer.

THE
IRONTON
STORAGE BATTERY LOCOMOTIVE

BEFORE you can buy an Ironton Storage Battery Locomotive our engineering department must know that it will give you satisfactory and economical service. There is no obligation on your part if you allow us to submit definite facts based on a careful survey of your conditions. When we suggest an Ironton, we know that Ironton will make a delighted owner. Write us.

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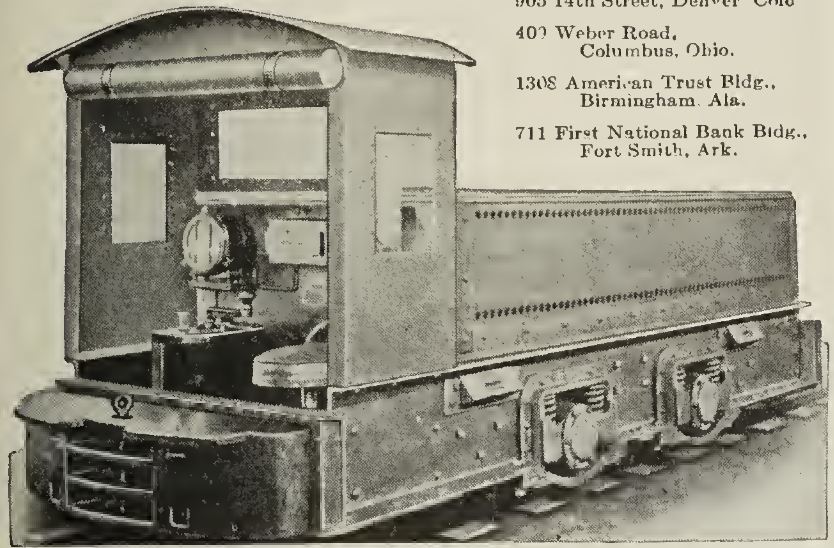
1308 American Trust Bldg., Birmingham Ala.
711 First National Bank Bldg., Fort Smith, Ark.



Substantial Savings
and
Increased Production
result from using Burke Electric Motors and Generators. They operate successfully under the most severe conditions.

Send for list of satisfied users in your industry.

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MAIN OFFICE AND WORKS
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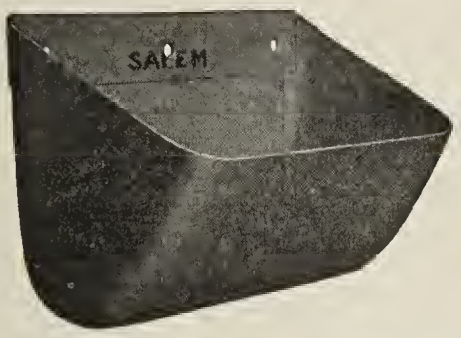
Salem Elevator Buckets



We are manufacturers of the original SALEM ELEVATOR BUCKET which is used for handling all classes of materials in many different industries.

This type of bucket is of one piece construction, with rounded contour throughout, smooth in form, durable in service and clean in handling and delivery of materials.

There are no seams in front nor on the ends, the laps being made on the back and bottom at the ends. On the back the laps are riveted or spot welded; on the bottom the end pieces are bent under and hammered tight.

The widest range of service is covered by a very full line of regular types and sizes and made in various gauges of steel, from the lightest practical for ordinary work to the heaviest necessary for the most severe duty.

Write for new price list.

THE WEBSTER MFG. COMPANY
4500-4560 CORTLAND ST., CHICAGO
Sales Offices in Principal Cities

The Peak of Kiln Efficiency

The Russell Tunnel Kiln has unbelievably decreased fuel consumption in all stages of burning.

Our Engineers will delve into the details of your burning problem at your request, free of charge.

Russell Engineering Company
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Russell
TUNNEL KILN

THE MINTER SYSTEM

200 Lbs. Coal per Ton of Ware

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. Saving first cost of 6 tunnels and equipment.

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

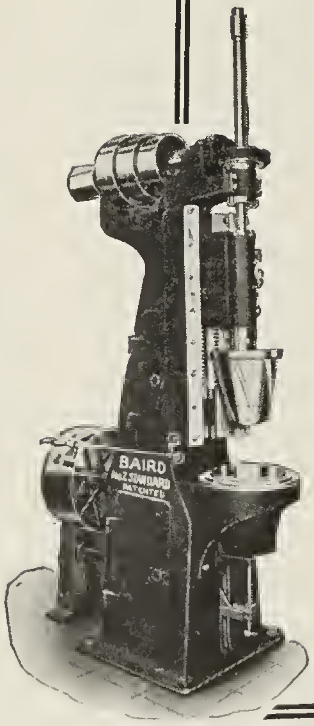
DON'T BUILD BEFORE YOU KNOW

The Minter System Plants are Producing the Cheapest Building Material made in America today.

The Minter System

HOME OFFICE
Albany, Georgia

BRANCH OFFICE
215 Doctors Bldg.
Columbus, Georgia



HIGH GRADE POTTERY

The Baird Pottery Molding Machine hasn't made all the pottery in the world, but it has consistently made the best pottery produced.

Baird machines stand for the best in pottery manufacture. Every manufacturer boosts them.

Built in four sizes.
For particulars address

ANDREW BAIRD
Designer - Manufacturer - Pottery Machinery
409-10 Burns-Gray Building, Detroit, Mich.

FIRE DAMAGES FAIRMONT PLANT

The Fairmont Brick & Tile Co. plant in Junction City, Ore., has been damaged by fire, it is reported. The extent of the damage is not known.

CHESTER, S. C., PLANT NOW WORKING

The new brick plant that was recently established at Chester, S. C., by H. M. DeVega, of Chester, and Walter Blains, of Blackstock, S. C., both of whom have been long identified with the brick manufacturing industry in the Southeast, has started operations with an initial capacity of 25,000 brick daily. The plant is largely equipped thruout with new machinery, and so constructed that additional units can be added for an increased capacity when conditions merit it. The investment represents several thousand dollars.

FASTEST BRICKLAYER IN THE WORLD

R. W. Blackburn, reputed to be the fastest paving bricklayer of the world, at work. Mr. Blackburn's home is in Whitacha Falls, Texas. He is an employe of the Plains Paving Co., now working at Tahoka, Tex. Mr. Blackburn lays from 40,000 to 45,000 brick every eight hours. 15 men carrying brick to him does not keep him busy, or rushed.

World's Fastest Bricklayer at Work.

TESTING FIRE BRICK AT WISCONSIN U.

Investigations of problems of fire brick lining in heating boilers are being made by two students in the College of Engineering, department of chemical engineering, of the University of Wisconsin at Madison, this year. The young men, Thomas R. Bogumill, of Thorp, and Frank Kubosch, of Milwaukee, are trying to determine what kind of fire brick lining is best suited to the nine boilers of the university heating plant. All of the boilers are operated at 125 to 250 per cent. overload at a very high temperature (2,600 to 2,800 deg. F.) This high temperature combining with the corrosive action of the ash in the coal, causes deterioration of fire brick linings, especially of the side walls.

Specimens of fire brick have been obtained from manufacturers in order to study them with regard to fusion point, shrinkage, and slagging action. All the work is being carried on in the laboratories of the department of chemical engineering and is done in cooperation with the university power and heating plant. They hope to find the type of fire brick which will last the longest.

W. G. BUSH MAKING MILLION BRICK WEEKLY

Completion has been announced of enlargements and improvements in the plant of W. G. Bush & Co., North Nashville, Tenn. The new additions and equipment, which cost approximately $100,000, raises the plant's capacity to a million brick weekly and places it as one of the foremost in the entire South. This company started on a small scale and

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men—in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Belt Conveyors and Belt Elevators	$5.00
Bricklaying in Modern Practice	1.20
Bricklaying System	4.00
Building Construction and Superintendence, Part. I, Masons' Work	7.00
Burning Clay Wares	7.50
Ceramic Industries (A Treatise on) E. Bourry	6.00
Clay Plant Construction and Operation	4.00
Clay Products Cyclopedia	3.00
Clayworkers' Handbook	6.50
Clay Working Problems	1.50
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Engineering for Land Drainage	2.50
Finding and Stopping Waste in Modern Boiler Rooms, Vol. 2	1.00
Garages and Motor Boat Houses	2.00
Glazer's Book	1.25
Hollow Tile Silo, 100 copies	5.00
How to Build Up Furnace Efficiency	1.00
Ideas for Improving the Clay Plant	1.50
Kent's Mechanical Engineers' Book	6.00
Land Drainage	2.00
Manufacture of Roofing Tile, (English Edition)	1.25
Manufacture of Roofing Tile (Worcester)	.75
Modern Brickmaking	7.00
101 Ideas for Improving the Clay Plant	1.50
Powdered Coal as a Fuel	4.50
Practical Farm Drainage	1.75
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	5.00
Rock Excavation, Handbook of	5.00
Scientific Industrial Efficiency	2.00
Scumming and Efflorescence	.50
Silo (The Hollow Tile) 100 copies	5.00
Steam Power	3.25

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent. import duty.

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Brick and Clay Record

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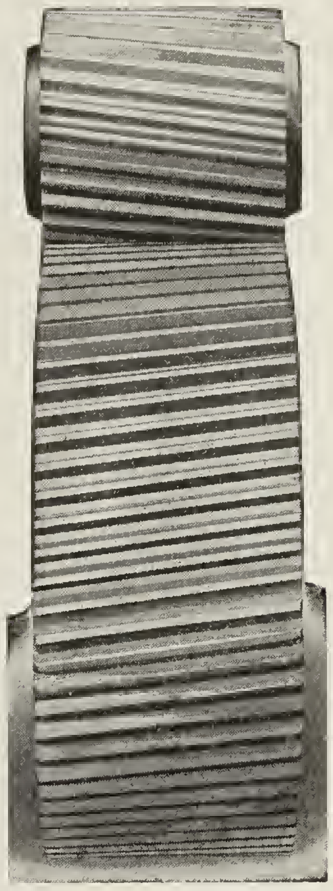
We manufacture Helical Gears from 2″ minimum to 138″ maximum diameter, any pitch up to 1 D. P.



Silent Helical Gears

We manufacture spiral gearing from 1″ minimum to 138″ maximum diameter, any pitch up to 1 D. P., and have complete heat-treating facilities.

R.D.NUTTALL COMPANY
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S E CO E

Uniformity Insurance

VELVETEX Face Brick enjoy a reputation for uniformity of color and texture. The Canton Brick and Fireproofing Company manufacture this famous brand and insure its consistency by scientifically mixing and blending the clays entering its manufacture with the SCHAFFER POIDOMETER.

The POIDOMETER weighs and mixes any number of clays to give an exact feed to the brick machine or wet pan.

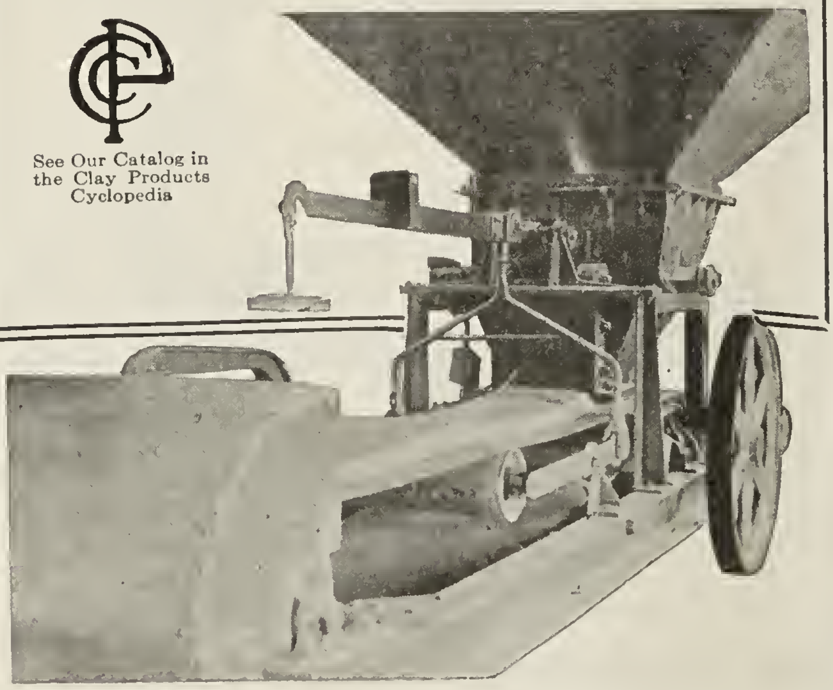
Eliminate guess work from your mixing operation and be assured of an unvarying product.

Let proved accuracy supplant condemned rule of thumb approximations. Join the clay manufacturers who gather a harvest from repeat orders, due to a uniform product. Install a SCHAFFER POIDOMETER.

Write for full information

Schaffer Engineering & Equipment Company
2828 Smallman Street
PITTSBURGH, PA.

See Our Catalog in the Clay Products Cyclopedia



until the completion of the recent improvements but 25,000 brick were made daily. The officers of the company are T. L. Herbert, W. Bush Herbert and Robert Herbert.

Machinery and Equipment

Devices and Methods, New and Old Concerning Which Information of Interest to the Clay Manufacturer Is Published

SPECIAL SHOVEL FOR MEDIUM CAPACITY

A new type of digging machine has been developed by the Universal Machine & Equipment Co. of Greensburg, Pa., and is called the Martin Tractor Shovel. A photograph of the machine in operation is shown herewith.

The power is developed by a gasoline engine, which operates a pneumatic pump for the crowding mechanism.

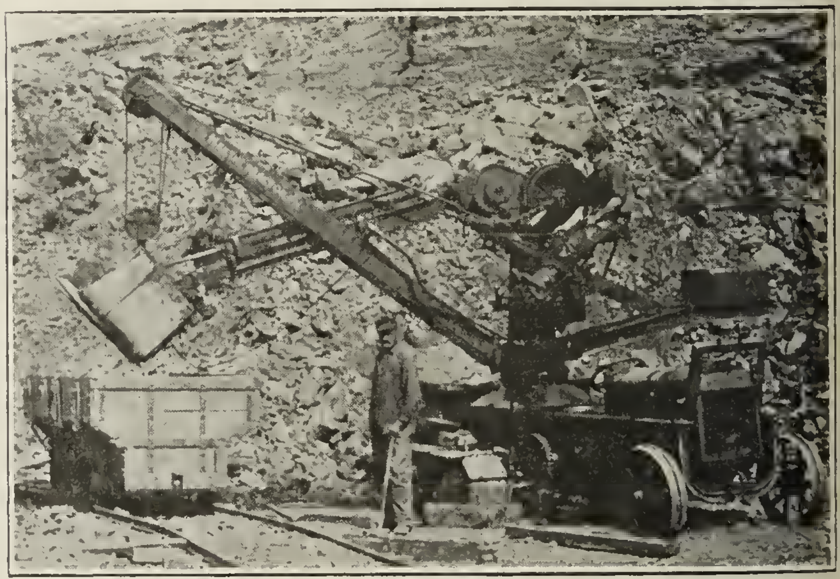
The advantages claimed are light weight, low cost, economy, speed in operation and transportation, maximum strength and dependability. All the bearings are enclosed and run in oil baths.

This type of shovel should appeal especially to manufacturers using a thin vein of clay or shale, which entails frequent moving of machine, and also to those plants making use of soft clay. It has a distinctive field not reached at present by the heavier power shovels.

A. F. Humphrey of the Keystone Clay Products Co., Greensburg, Pa., has some very complimentary remarks to make regarding the installation of the Martin Tractor Shovel at the Keystone plant. Mr. Humphrey says:

"On two occasions we rented from the Universal Machine & Equipment Co. one of their experimental shovels to dig our overburden which consists of a sticky 'limestone clay'—sandy shale, and in places a seam of limestone boulders varying in size from a pebble up to 4,000 pounds.

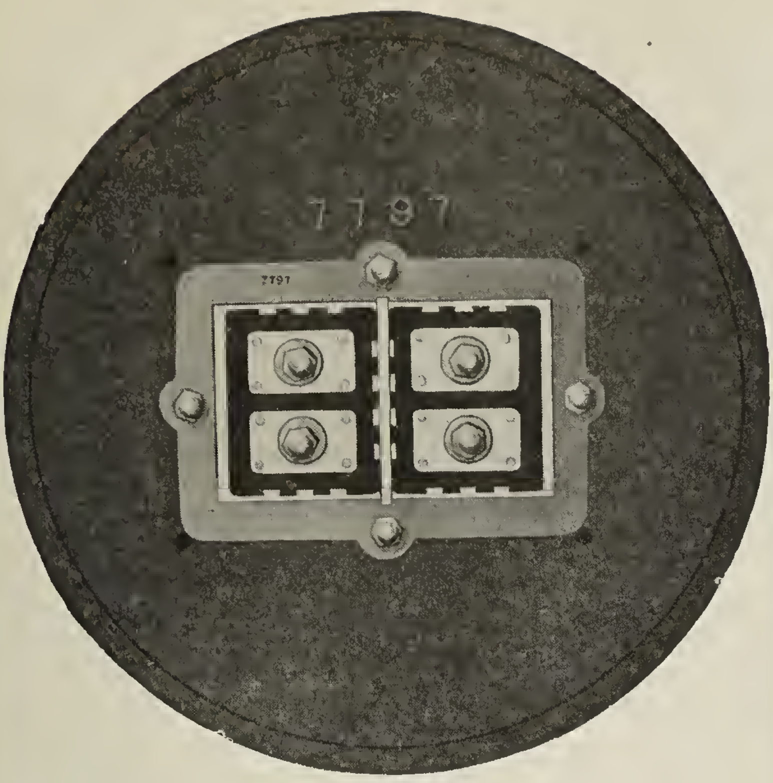
"During the fall of 1922 we stripped 2,000 cubic yards with one of these little shovels at a total cost, including rental of the machine, of 55 cents per cubic yard. At this instance the overburden was hauled by team a distance of about 200 feet on the average. Had we been unable to obtain a small shovel similar to this one we would have had to strip by hand as the work was done at a point inaccessable to a large steam or electric shovel.



Shovel Operated by Fordson Tractor

"This spring we moved 4,000 cubic yards of our overburden in dump cars after it was dug by this little gasoline shovel. The cost was 68 cents a cubic yard. The haul was 350 feet on the average. A large part of our expense here was due to the preparation we had to make to haul the soil.

"We find the cost of running a Martin shovel is about $15



Better Clay Ware Produced By—

LOUISVILLE DIES

Produced by an organization with many years experience, backed by a knowledge capable of original developments.

No Imitations In Designs Or Man Power

Avail yourself of the experience in back of the Louisville Die by writing for Engineering counsel, given free of charge.

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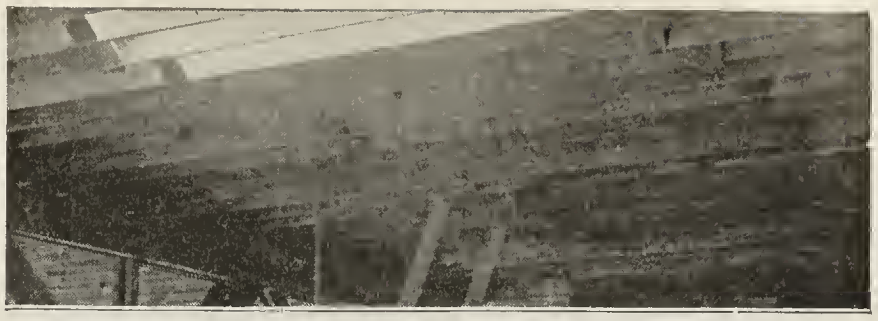
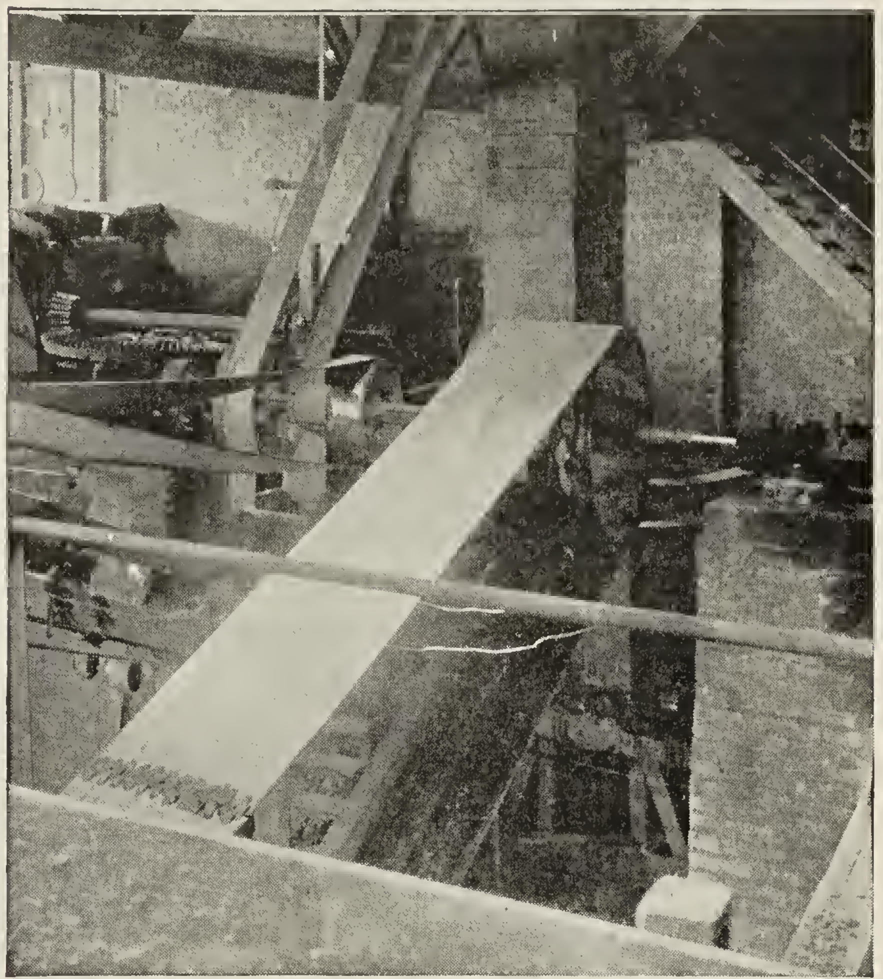
THE
LOUISVILLE MACHINE
MANUFACTURING CO.
Louisville, Ohio

If It's Dies You Want—
—We Make 'Em



GOODYEAR MEANS GOOD WEAR



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On all the hard drives for which the brick and clay industry is noted—the main drive, the crushers and grinding pans, pug mills and brick machines, represses and auxiliaries—and in all conveying and elevator duty, Goodyear Belts have an earned reputation for powerful, trouble-free service and long, economical life.

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Goodyear, in distinctive types for specific services

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Air, Water, Steam, Fire and Mill

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PUMP VALVES

Goodyear Belts and other mechanical goods for the brick and clay industry are scientifically specified to their work under your conditions of service by the G. T. M.—Goodyear Technical Man.

For performance records or any other information about them, write to Goodyear, Akron, Ohio, or Los Angeles, California.

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GOODYEAR

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"HURRICANE" DRYERS

TUNNEL DRYER FOR INSULATORS

Cut Your Drying Time

Reduce Costs Save Space
Produce Better Ware

Drying is one of the most important processes in the ceramic industry. To dry evenly, without spoilage the finest ware and do this at the lowest cost is a thing every up-to-date manufacturer is striving to do.

"Hurricane" Dryers are doing these things every day for their owners.

One customer says, "We have cut our drying time on large electric insulators from 8 days to 48 hours," another, "We are cutting our sagger costs 50% to 75%."

May we show you the opportunity of savings in your plant?

Mangles Stove Rooms
Electrical Porcelain Dryers
Sagger Dryers Tunnel Dryers

Catalogs on request

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per day. Made up as follows: Operation $7, fuel (gasoline) and oil $4 per day, with a $4 charge to maintenance and depreciation.

"With good hauling facilities the experimental shovel can easily average 200 cubic yards a day at a cost of 7½ cents a cubic yard. It is our understanding that the shovels now being made to be put on the market have been speeded up so that we feel safe in figuring on 300 cubic yards a day as an average.

"The digging of this shovel with its one-half yard dipper is similar to that of all standard shovels. The construction, however, differs from all other shovels with which we are familiar. The power, for both digging and transportation is furnished by a Fordson motor."

PERFECT NEW TYPE OF EXPLOSIVE

For years, explosive manufacturers have struggled with the problem of making an explosive which would possess all the advantages of dynamite and at the same time be immune from freezing.

Numerous forms of such explosives have been tried in years past but, as the Atlas Powder Co. claims, the problem has remained unsolved until the development of the new Atlas non-freezing explosive Ammite.

In Ammite, the manufacturers say they have produced the ideal non-freezing explosive—an explosive that retains all the advantages of dynamite in strength, velocity, water-resistance, sensitiveness and stability combined with the additional advantages of being non-freezing and of not causing headaches when handled.

Not only that, but as all qualities of Ammite remain at the same high standard in the heat of summer as well as during the cold in winter, the manufacturers recommend Ammite as an all-year-round explosive—an explosive that may be kept in proper storage indefinitely without harming its strength, sensitiveness and stability in the least.

Ammite is graded as to its percentage strength in the same manner that the various forms of dynamite are graded. It is made in six grades—75, 60, 50, 40, 35 and 30 per cent.—sufficient to meet practically every requirement encountered in any kind of blasting, be it mine, quarry, clay pit or construction work, either above or below ground.

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IT'S ALL IN THE STATE OF MIND

If you think you are beaten, you are;
If you think that you dare not, you don't;
If you'd like to win, but you think you can't,
It's almost a cinch that you won't.
If you think you'll lose you've lost,
For out in the world you find,
Success begins with the fellow's will,
It's all in the state of mind.

Full many a race is lost
Ere even a step is run,
And many a coward fails,
Ere even his work's begun.
Think big, and your deeds will grow,
Think small, and you'll fall behind;
Think that you can, and you will;
It's all in the state of mind.

If you think you're outclassed you are,
You've got to be sure of yourself before
You ever can win a prize.
Life's battles don't always go
To the stronger or faster man,
But soon or late the man who wins
Is the fellow who thinks he can.
Author Unknown.

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

The Synthetic Products Problem

OF LATE there has been considerable attention focused on synthetic and imitation products akin to clay ware. Some clay manufacturers have become quite perturbed over concrete brick. This synthetic brick peril which was discussed in Brick and Clay Record long before the recent outbreak of publicity and ambitious claims, is a serious problem. It is especially important that the clay industry be careful how it treats this subject.

Burned clay has withstood the test of time—as we so aptly stated and pictured on the front cover of Brick and Clay Record many years ago. This is not a time for the industry to feel it is necessary to defend its products. By this we mean resorting to tests and counter tests.

The cement people are just shrewd enough to know that if they can get into a controversy with the clay industry, the publicity will do them the most good. A test on masonry is not a test on the product. If mortar is weaker than the brick or tile, then the mortar will be the limiting factor of a test.

It is up to the cement people to prove that their product is as good as burned clay and not up to the clay industry to prove that clay products are better than cement. Clay products are not an experiment. They are a proven product with a record of centuries of standing. Of course it is perfectly proper that the clay industry should have information and data available in abundance, but this should not be used for controversial purposes.

Concrete brick and concrete blocks are undoubtedly here to stay and nothing the clay products industry can do will eliminate them from the face of the earth. The clay industry can, however, determine the quantity in which these products will be used in the future. Advertising and publicity is the industry's greatest weapon. Such publicity, however, should boost clay products and not knock concrete products.

It has often been stated that approximately 89 per cent. of buildings constructed in this country are of frame construction. The remaining 11 per cent. are built of more permanent materials including clay products, stucco and cement. Let us go after this 89 per cent. and forget the 11 per cent. that we are sharing with other products. If the clay brick manufacturer can get all the business he wants, that is all he should be interested in. Let the concrete brick manufacturer take what is left. If we both fight for the 11 per cent. the lumber manufacturers practically have the remainder of the field for themselves.

The hollow tile, common brick and face brick manufacturers should be fighting for a part of the 89 per cent. that is still unconverted to permanent construction. This field is large enough for all of us. Fighting the other fellow is admitting the merits of his product.

Convention Time

Is fast approaching and it's time to watch Brick and Clay Record for news regarding the meetings of the various associations. Next issue will contain an announcement of the coming American Face Brick Association meeting. In the following issue more details of the wonderful Common Brick Manufacturers Association trip will be given.

Plans for other association meetings will also be announced soon. Besides that more good information

Is Coming!

* * *

Save Money on Burning

HOW MANY MANUFACTURERS have watched the co-operative research conducted by the various national associations? The saving in burning time, fuel consumption and the increased percentage of No. 1 ware on some of the plants where the research crew operated has been a revelation. Even on plants considered to have a very economical system of burning there are found opportunities for making considerable savings. The findings have been so general that every clay products manufacturer should be strongly impressed with the opportunity for saving money in the burning department of his plant.

* * *

Hudson River Is Uneasy

HUDSON RIVER brick manufacturers are beginning to reap the reward of their former hard-shelled and indifferent attitudes toward modern methods of business. They are now wildly searching for $4 a day laborers as has often been predicted they would if they would continue to ignore the use of machinery instead of men.

On top of their problem to secure labor, they are facing another serious enigma in foreign brick competition. Hudson River is much worried over the big fall in business during the month of September. Foreign brick from Holland and Germany are being blamed for this condition. They want to appeal to Congress, but they will find Congress slow to act with individuals. An appeal thru an association is much more effective with the legislators, but Hudson River manufacturers, except the more progressive ones, "have not seen any reason why they should join their national association."

A big drop in prices of common brick right now would do much to discourage persons from dealing in foreign brick. In fact, it would undoubtedly stop further negotiations for making connections with foreign brick manufacturers, which we understand are going on at an increased rate. However, to lower the selling price it would be necessary to lower the cost of the manufacture of brick. We predict a big weeding out of plants on the Hudson River, with those surviving who have modernized their production methods and decreased their costs.

Fine Program at Fall Meeting

Attendance at A. C. S. Fall Meeting, New York, September 19, Was Very Good — Interesting Papers Presented — Visit Chemical Exposition

A RICH PROGRAM of highly instructive and stimulating papers and discussions, together with the splendid exhibits afforded by the National Exposition of Chemical Industries, and the opportunities for good fellowship, made Wednesday, September 19, 1923, the shortest day of the year for those who attended the Fall Meeting of the American Ceramic Society held on that day in the Grand Central Palace, New York.

Vice-President Robert D. Landrum welcomed the membership at the afternoon session given over to the presentation of papers and addresses. Secretary Ross Purdy, in the absence of Secretary Frederick W. Donahoe of the Refractories Manufacturers' Association, who was prevented from attendance, read an outline of the latter's report dealing with results in the cooperative investigations conducted by the Refractories Manufacturers' Association and the U. S. Bureau of Mines of methods of promoting fuel economy in kiln management.

Speaks on Color Measurement

A. E. O. Munsell, Munsell Color Co., New York, spoke on the "Method of Color Measurement, an Industrial Need." He said the ceramic manufacturer had the choice of two methods of approaching his color problems, one being the simple and practical, the other the theoretical and complex. In the world of sounds, the keyboard of a piano makes possible the former method and in that of color the eye performs a like service, spectrum analysis being for the solution of the more complex color problems. Mr. Munsell exhibited a color tree, divided into ten values, beginning with the solid black at the bottom of the trunk and gradually becoming lighter and lighter until at the top white is reached. Branches of the color tree showed the various hues. Mr. Munsell laid stress on the progress achieved in discussions by the ceramic industry of its color problems. "If we were able to discuss these color problems," he concluded, "we are half ways on the road to their solution."

Frederick H. Rhead, director of research of the American Encaustic Tiling Co., Zanesville, Ohio, said that in the investigation of some 20,000 different glazes with a view to their standardization, he had been greatly aided by the methods of color measurement advocated by Mr. Munsell.

Importance of Design

Richard F. Bach, Curator, Industrial Arts Division, Metropolitan Museum of Art, New York, emphasized the important part played by design in the ceramic industry's products, the value of the raw material being increased in many instances between 200 and 300 per cent. by the time it reaches the saleable stage—thru design. He referred jocularly to a sign he had recently observed and on which some enterprising man held himself forth as a "designing contractor." The facts showed that nearly every one selling a manufactured product was selling very largely design, and not, as many seemed to believe, merely raw material plus labor. Mr. Bach said it was his business to sell the commercial museum idea to the manufacturer, and for that reason he rather deprecated the title of curator which implied hoarding, when his real job was to exploit, to sell the ideas contained in the museum collection.

"Is the designer not as important as the chemist?" he asked. "Your name means something and partly you may sell on price, but chiefly you sell on looks—on design. You must get behind the public schools so that they will furnish the right supply of raw material for the technological as well as the art schools. Put your finger into the educational pie, take an interest in the art schools. Let us have schools that will turn out the right stuff. By all you hold holy in your industry, make those schools do right by you. Above all, see that they turn out finished craftsmen."

Color Analysis and Application

Hibbard S. Busby, colorist, spoke on "Color Analysis and Its Application." He said the chief difficulty encountered in colorimetry was to find some means of representing in black the values of different colors and tolerance limits of colors. It was due to this difficulty that so seldom one encountered an actually faithful reproduction in colors of sketches. Great progress was being made, however, and the complete recording of glazes and matt surfaces would be surely accomplished within a few years. Control over the elements of appearance was being more and more perfected and it would not be long before the enameler would have at his disposal a means of defining every variation of his shades and textures.

Bole Outlines Possible Economies

George A. Bole, U. S. Bureau of Mines, Columbus, Ohio, presented a paper on "Possible Economies in Kiln Firings," in which he pointed out that a saving of 25 per cent. in time and 20 per cent. in fuel frequently can be made by the right sort of change in equipment. The ceramic industry, he said, is cooperating whole-heartedly with the government in this research, as are the Mellon Institute Laboratory for Industrial Research and the heavy clay products and refractory associations. True economy applied to ceramic kiln firing must result in the highest grade of ware and the very first requisite to that end is the selection of the proper fuel and the proper grade of this proper fuel dictated by the conditions. The proper fuel may be producer-gas, oil, or coal, every ceramic superintendent being under obligation to use the most economical grade of the most economical fuel. A relatively light oil of low B.t.u. value may be more economical than one of higher calories. In all fuels, cost, B.t.u. value, and handling charges must be carefully considered and compared. Oil would furnish the solution in some cases and natural or producer gas in others. Market conditions would have to be considered before everything else. Economic conditions determine the ultimate cost. Ash-fusing temperatures must not be lost sight of.

Oxygen of Highest Importance

Following the choice of the right fuel, an exhaustive study of proper combustion must be made. After mature study and extensive experiments one plant removed patent burners and substituted a home-made system to advantage. Mr. Bole pointed out that too little is the important part recognized which oxygen plays in combustion, oxygen being, in fact, a most valuable coworker with carbon. Enough air must penetrate the fuel to gasify it. Due attention must be given to stoking and proper regulation of the fuel bed. "Complete combustion in fire boxes is not aimed at in ceramic practice," said Mr. Bole, "progressive combustion being preferred." Airholes used in up-draft kilns can also be used in down-draft kilns. Setting of ware wields a considerable influence on combustion. Excess air costs money to burn, and the loss can be figured easily.

Factors Which Make for Economies

Summing up, Mr. Boles named as aids to correct combustion mechanical stokers, proper draft and insulation and a proper temperature recording system. The rate of heat supply, as well as the quantity of the supply, must be under perfect control. Mechanical draft, both forced and induced, frequently serves to overcome improper natural draft. Proper heat distribution can only be had with good draft and proper combustion. Kiln design is, of course, also an essential factor. Heat must be properly conserved, and in this connection Mr. Bole said the insulation principle was sound, altho in some instances savings had been exaggerated. Heat losses have been studied by the Bureau of Mines, which will soon present conclusive figures, dealing also with the economies resulting from the utilization of waste heat from a cooling kiln for dryer purposes. The economies of regeneration taken advantage of in the steel industry had never gone beyond the confines of the glass division of the ceramic industry. The continuous kiln, the tunnel kiln, and compartment kiln, Mr. Bole said, denoted a great step forward in the conservation of time and fuel, and where criticisms had been voiced, they were in a large measure caused by omission to study the needs of a particular plant before, instead of after installation. Cooperation of ceramic producers and kiln builders would surely overcome these shortcomings.

Tells of Specifications Board's Work

"Investigations by and purposes of the Federal Specifications Board in reference to ceramic products," was the title of a paper presented by R. F. Geller of the U. S. Bureau of Standards, who traced the history of the Specifications Board from its organization in 1921 under the direction of the president. There are now in force 63 different specifications which, however, are mandatory for government departments only, but which were arrived at thru closest cooperation with the manufacturers. Mr. Geller briefly reviewed the government specifications for chinaware, stoneware, enamels, refractories, and road paving material. Altho entirely separate and distinct, the Federal Specifications Board is in close touch with the work of the Division of Simplified Practice, which wields a wide sway because of the voluntary cooperation in its activities by many industries and all engineering bodies.

R. M. Howe Speaks

R. M. Howe, Kier Fire Brick Co., Pittsburgh, Pa., briefly discussed "The Properties of Some Commercial Refractories," confining his remarks to an explanation of the very interesting analytical charts and tables exhibited and dealing with the physical properties of refractories. In the course of his brief remarks, Mr. Howe said that an open hearth steel furnace superintendent had recently told him that silicon brick do not spall as much as fire clay brick.

A very interesting selection of slides depicting "The Manufacture of Refractories" was shown by W. F. Rochow, Harbison-Walker Refractories Co. Of particular interest were photographs of Austrian magnesite plants, which afforded an opportunity for comparison with American plants, photographs of which were also shown.

Dwight L. Hoopingarner, executive secretary of the American Construction Council, extended to the members of the American Ceramic Society an invitation to participate in the annual meeting of that body which was held in New York, Friday, September 21.

Following the meeting, those in attendance viewed the many exhibits of ceramic interest shown at the Chemical Exposition, and at 7 o'clock they gathered for an informal dinner at the Hotel Commodore.

Among the companies exhibiting at the exposition were the following which are familiar to readers of Brick and Clay Record:

Baker R. & L., Co., New York, N. Y.
Chas. Engelhard, Inc., New York, N. Y.
General Electric Co., Schenectady, N. Y.
The Bristol Company, Waterbury, Conn.
Brown Instrument Co., Philadelphia, Pa.
Celite Products Co., Chicago, Ill.
Central of Georgia Ry. Co., Savannah, Ga.
Clark Tructractor Co., Buchanan, Mich.
Proctor & Schwartz, Inc., Philadelphia, Pa.
B. F. Sturtevant Co., Hyde Park, Boston, Mass.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

USE OF SILO BLOCKS FOR FLOORS

There is no reason, says the agricultural engineering department of Iowa State College, why silo blocks would not be just as satisfactory for a hog house floor as regular wall blocks, providing they are covered with a layer of cement. Usually, silo blocks are made of somewhat better material.

The silo block floor has proved satisfactory to the agricultural engineering department, which has used it at Ames. They say this type of floor is enough warmer than solid concrete that hogs will pick it out when given their choice.

TO DISCUSS MAGNESITE DUTY RATES

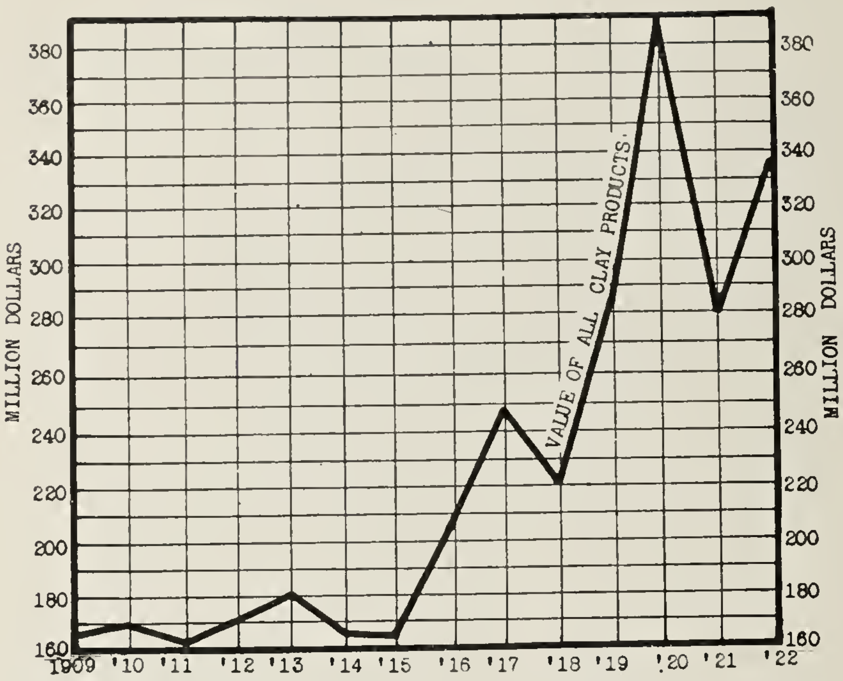
The Tariff Commission, at the request of the Austro-American Magnesite Co., has postponed from October 1 to December 5 a hearing in its investigation of differences in the cost of production here and abroad of crude magnesite, caustic calcined magnesite, dead burned and grain magnesite, not suitable for manufacture into oxychloride cements, and magnesite brick. The investigation has been instituted to determine whether a change in the present duties is justified under authority vested in the President by Section 315 of the 1922 act.

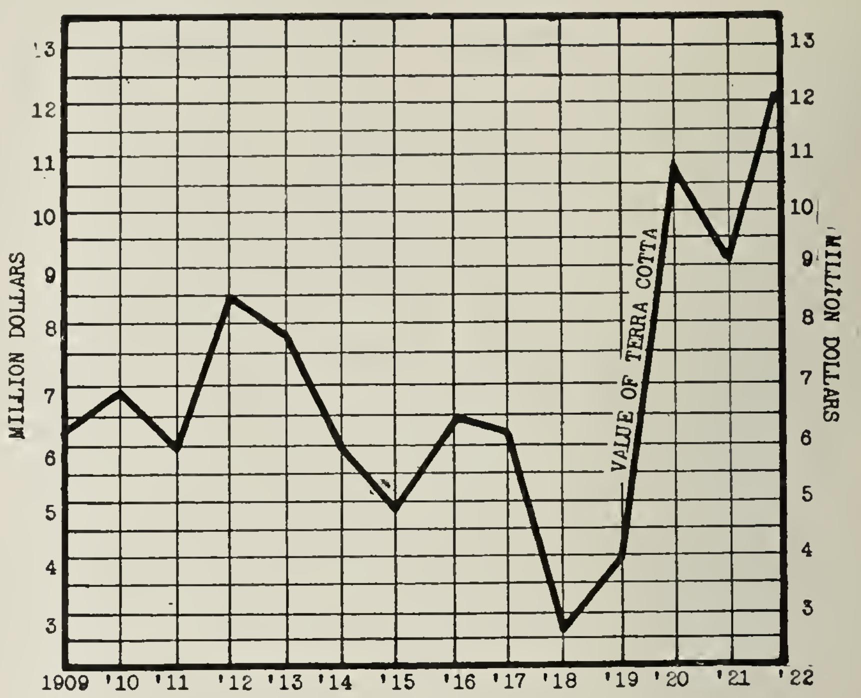
Crude magnesite is subject at present to a specific duty of five-sixteenths or one cent per pound; caustic calcined magnesite, five-eighths of one cent per pound; dead burned and grain magnesite, not suitable for manufacture into oxychloride cements, twenty-three fortieths of one cent per pound; and magnesite brick, three-fourths of one cent per pound and ten per cent. ad valorem. The hearing on December 5 will be held at Washington and will be open to the public. Interested parties will be permitted to present testimony.

WANT TO ORGANIZE CLAY WORKERS

In a lengthy address on conditions in the clay industry, before the Central Labor Union of Elizabeth, N. J., recently, Conrad F. Nystrom, fifth vice-president of the United Brick and Clay Workers of America, stated that a gigantic effort to organize all of the brick and clay workers of New Jersey would be made. During the course of his talk Mr. Nystrom also recounted the details of the strike at Sayreville, N. J. Mr. Nystrom stated that within a short distance of Elizabeth, in the section around Perth Amboy, N. J., there are fully 20,000 unorganized clay workers. The United Brick and Clay Workers of America have been trying to organize this district for the past 25 years without success.

He charged the brick manufacturers in the New Jersey and Hudson River clay districts with the continual exploitation of immigrants and even the experimentation with nationalities.





	Value of All Clay Products		
1909	166,321,213	1915	163,120,232
1910	170,115,974	1916	207,260,091
1911	162,236,181	1917	248,023,368
1912	172,811,275	1918	221,884,651
1913	181,289,132	1919	286,261,276
1914	164,986,983	1920	388,746,923
		1921	278,492,385
		1922	335,518,035

	Value of Terra Cotta		
1909	6,251,625	1915	4,796,062
1910	6,976,771	1916	6,466,336
1911	6,017,801	1917	6,173,550
1912	8,580,436	1918	2,658,693
1913	7,733,306	1919	3,988,182
1914	6,087,652	1920	10,851,902
		1921	9,068,473
		1922	12,409,543

FIGURES ON CLAY PRODUCTS VALUE

Herewith are published the figures and charts showing the value of all clay products produced from 1909 to 1922 inclusive and the value of all architectural terra cotta produced during the same year. The charts were omitted from the September 18 issue of Brick and Clay Record, which contained figures on the production and value of clay products in 1922, because of lack of space. With regard to the curves published in last issue, Brick and Clay Record's attention has been called to the fact that the captions under the charts were not quite clear. These captions read—"Read Production Curve from Left—Value Curve from Right." To be perfectly clear they should have been as follows: "Read Production Curve from **Figures** on the Left—Value Curve from **Figures** on Right."

* * *

UNFILLED ORDERS INDEX DROPS

The weighted index of unfilled orders for basic commodities compiled by the Department of Commerce at 60.3 on September 1, based on 1920 as 100, may be compared with 67.6 on August 1 and 66.9 on September 1, 1922. The index of wholesale prices of goods still in the raw or semi-finished state, requiring additional manufacture, at 138 for August on a 1913 base, may be compared with 141 for July and 129 for August, 1922. The wholesale price index of consumers' goods for August was 155, as against 154 for July and 149 for August a year ago.

* * *

BIG PAVING BRICK OUTPUT IN AUGUST

Paving brick shipments for the month of August were higher than for any previous month in 1923, according to statistics just issued by the National Paving Brick Manufacturers Association. Reports from 67 per cent. of the industry's tonnage showed that shipments were more than nine million greater for August than for July, 36,446,000 being shipped in August and 27,092,000 in July.

Production for August was 33,457,000 as against 30,529,000 for July. Stock on hand the last day of August was 74,399,000 as against 78,835,000 the last day of July. This reduction of 4,000,000 in stock on hand was due principally to the heavy August shipments.

There was a falling off in unfilled orders amounting to 12,000,000 brick, a natural trend toward the end of the summer paving season.

Ohio leads all other states in consumption, 5,781,000 going for city streets and 5,784,000 for country highways. Illinois was second with Pennsylvania, Nebraska and Texas following closely.

* * *

RECORDS ESTABLISHED IN U. S.

Within the past few months, according to the United States Chamber of Commerce, this country has set new records for pig iron production, cotton consumption, steel ingot production, automobile and truck production, residential construction, production of locomotives, volume of mail order sales, volume of retail sales and volume of railroad car loadings. In addition to this the largest crude oil production on record has been established.

* * *

WE ARE GROWING WEALTHIER

The following are some interesting figures which indicate the country's progress in population and finances since 1913. Since that year our population has increased 14,000,000, the annual national income from 34 to 50 billions of dollars, savings deposits from 6 to 14 billions and deposits in national banks from 6 to 17 billion dollars.

* * *

SOUTH'S BUILDING COSTS 24% LESS THAN NORTH'S

According to the Atlanta (Ga.) Constitution semi-annual building survey, building costs in the Southern states are 24.7 per cent. less than in the cities of the North. A thoro compilation of the principal items entering into construction expense, drawn both from the leading cities of the East and North, and the principal contractors of the South, reveal the startling fact that Southern property owners are in far more favorable situation to meet the increasing demands for buildings of every nature than are their Northern brothers. It is estimated that material costs are 60 per cent. of construction totals, while labor accounts for the remaining 40 per cent. of expense. Southern pine and other common lumber, brick and hollow tile are the principal items of materials produced generally thruout the Southern field. Freight rates are reduced to a minimum, being at the base of these supplies, and the labor involved in the production of these materials is cheaper than in other sections. The few items produced principally in the North, which show a greater cost to Southern builders are those which figure least in total construction costs, such as structural steel, plaster and cement.

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BRICK HOUSE PRICE INDEX DROPS

The price index of building materials entering into the construction of a six-room frame house at 215 for August, based on 1913 as 100, may be compared with 214 for July. For a six-room brick house the index is 216 as against 217 for July.

This Picture Shows Why Hudson River Brick Manufacturers Are Worried as Pointed Out in an Editorial in This Issue. It Shows the First of a Series of Shipments of Brick from Germany Being Unloaded at a New York Pier. These Brick Are Sold in the New York Market at a Lower Price Than the Domestic Product. Photo Copyrighted by Underwood and Underwood, N. Y.

CEMENT PRODUCTION BREAKS RECORD

All records for the production and shipment of portland cement were broken in August, according to figures just issued by the U. S. Geological Survey. Several times this year people who have been in doubt as to the productive capacity of the cement industry, have had their guesses shattered by the way the industry has kept pace with demand. Production during August was 12,967,000 barrels, an increase of 350,000 barrels over July, the best previous record, and 1,300,000 over August last year. Production for eight months ending August 31 was nearly 88,000,000 barrels or more than was produced in any one of the entire years 1915, 1918 or 1919.

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BELIEVES PROSPERITY WILL CONTINUE

"At no previous period in the last five years has the general situation in the United States been as stable as to-day," says the National Bank of Commerce. "Business continues active and there is confidence in the outlook. The advance in money rates which has taken place since the beginning of July is no greater than is to be expected as requirements for funds approach their autumn peak. Except where special factors affecting supply and demand are operative, the general price level shows no indication of radical change.

"Considering the country as a whole, purchasing power is good and while consumers are disposed to buy carefully they are nevertheless purchasing steadily and in good volume. Production in most lines is being maintained at a fair rate with promise of the customary seasonal expansion. High wages, high prices of important raw materials and resistance to price advances on the part of the consumers have combined to restrict profits in many industries, but this is a thoroughly sound situation. Business peril lies in easy profits. Rigid economy, improvement of methods and effective selling policies are all encouraged by the conditions now prevailing, and the result should be a continuance of prosperity."

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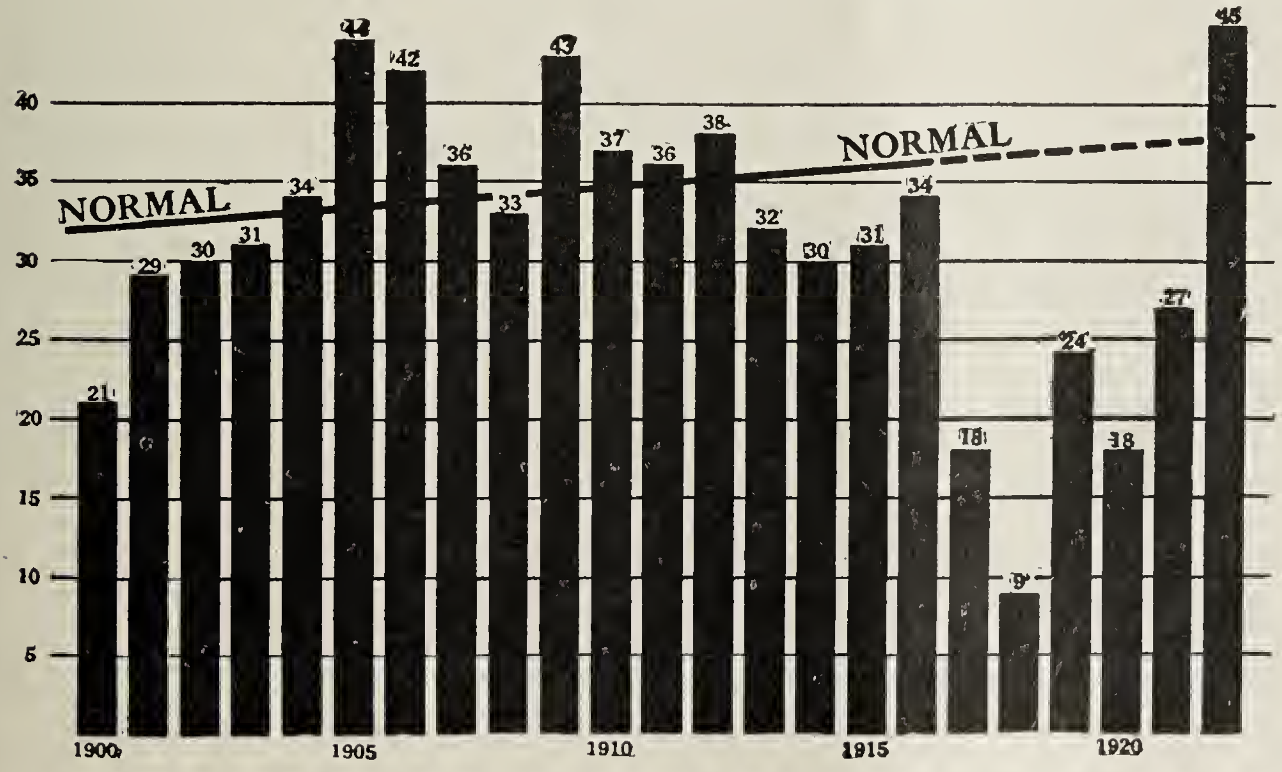
CORRECTIONS OF ARTICLE ON DRAINAGE

In order to avoid confusion in the reading of H. B. Roe's article on "Correct Methods of Farm Drainage," Brick and Clay Record desires to call attention to the omission of the following headings: on page 407, the September 18 issue, just before the paragraph headed "Digging to Guide Lines" there should have been the center heading "Tile Drains" to distinguish all that follows from the preceding instructions similarly headed "Ditches." On the same page, about the middle of the second column, the paragraph beginning, "Most of the spading, and so forth," should have been headed "Trenching Tools." The last paragraph on the same page should have been similarly headed, "Target."

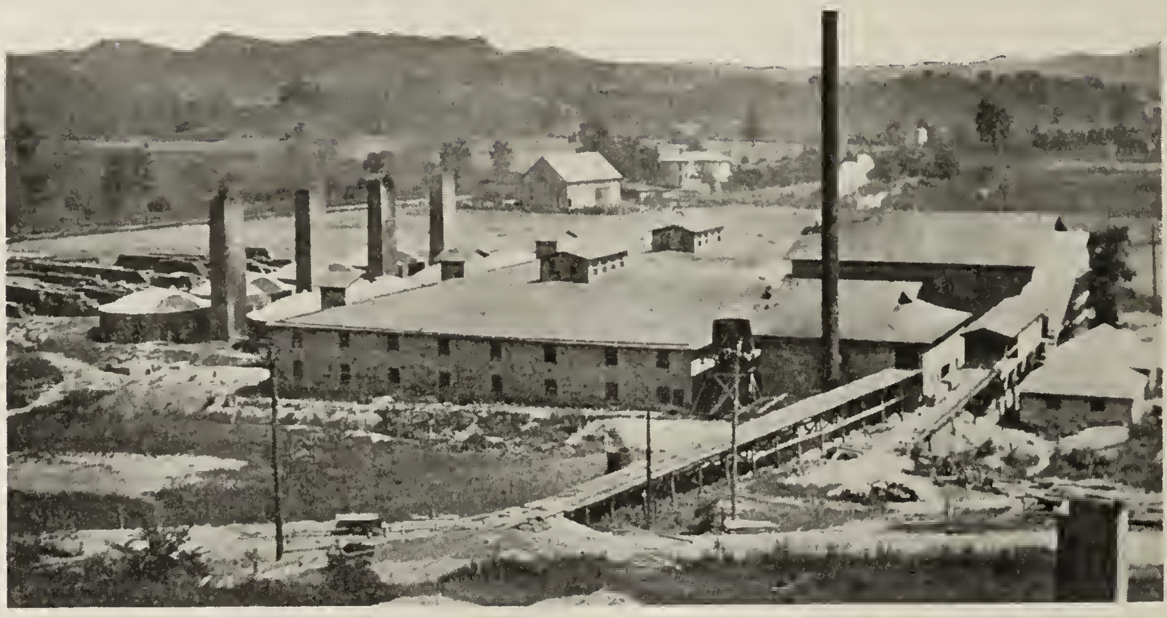


Col. Leonard P. Ayres, vice-president of the Cleveland Trust Co., here shows graphically the situation with regard to building. The chart shows the total yearly value of building permits per capita of population in 50 cities after data have been converted to 1913 cost basis, compared with the estimated normal.

Building operations, as can be seen on the chart, have so constantly been lagging below normal since 1913 that the slight recovery which was made in 1922 and which is being made in 1923, will not go very far toward making up the needed construction.

A Modern Sewer Pipe Plant

Description of Equipment and Layout of Stillwater Clay Products Co.—Plant Designed to Eliminate as Far as Possible the Human Element in Handling and Preparation



Birds-Eye View of Stillwater Clay Products Co.'s Sewer Pipe Plant

Only Most Modern Equipment Used in Plant—Clay and Coal Mined from Same Deposit—Plant Designed to Give Flow of Material Direct Line with No Back Tracking

PRODUCTION OF SEWER PIPE has been steadily climbing. Bureau of Census figures published in the September 18 issue of Brick and Clay Record revealed a remarkably steady growth for this commodity during the past several years. Naturally this stimulated production, which obviously is a measure of the demand, has spurred construction of new plants. Among the newest plants is that of the Stillwater Clay Products Co. which is located right in the heart of the great sewer pipe district in Ohio.

The plant of the Stillwater Clay Products Co. is located about two miles south of Uhrichsville on the Newport Railroad and close to the B. & O. Railroad. The site on which the factory was built is sloping and it was necessary to do some excavating and some filling but not as much as is customary in the construction of most factories.

Designed to Eliminate Human Element

In designing this plant the principal aim was to eliminate as far as possible the human element in the handling and preparation of the clay. It was also the intention to give to the flow of material as direct a line as could be secured under the prevailing conditions so that there would be no back tracking of the clay in its travel from the mine to the finished product in the yard.

The main building is 128x256 feet of two story mill construction. The walls are constructed of hollow block. The ground floor is concrete under which are laid lines of four inch sewer pipe for carrying steam for heating purposes. The second floor is taken care of by a series of iron pipe overhead as is standard practice in most sewer pipe plants. The building is exceptionally well lighted and ventilated.

Big Handling and Drying Space

The machinery annex is 70x70 feet and is of the same construction as the main building. All of the clay preparation and fabricating machinery, with the exception of the crusher, is located in this annex. This allows the entire floor space in the main building to be used for handling and drying of the ware. The annex is located midway on the rear side of the main building.

The engine room is a separate building measuring 30x50 feet and is located in the corner formed by the annex and the main building. It was placed 15 feet from the other buildings. The combination boiler house and engine room are of the same construction as the main building. The equipment of the power house consists of three 18 foot x 72 inch return tubular boilers and one 450 h. p. Corliss steam engine.

Coal Vein in Mine

Both coal and clay are obtained from a hill adjoining the plant. The coal is used in the power plant. The clay mine entry is located only about 100 feet from the machinery annex. The mined clay is hauled up onto the tipple from the mine by means of an electric hoist. The loaded cars are dumped directly into a 18x30 inch single roll crusher, where it is reduced to about three inch size. It is then conveyed by belt conveyors into the crushed clay bin. From the crushed clay bin the clay is fed into two ten foot Toronto heavy duty dry pans. The feeding is done automatically by means of plate feeders. The dry pans reduce the clay to the required fineness and the ground material is elevated by means of two 14 inch bucket elevators to two Sturtevant mechanically operated screens. The tailings, of course, return to the dry pans and the fines are elevated into a storage bin for finely ground clays. This bin is located over two nine foot Toronto wet pans. After the clay is sufficiently mixed in these pans it is elevated and fed into a Toronto 44x20 inch sewer pipe press by means of a feeder. The press is mounted on a structural steel frame and delivers onto the second floor.

The sewer pipe are handled on the special truck designed for inter-department sewer pipe transportation.

At the present time the plant is equipped with eight 36 foot round down-draft kilns arranged two kilns to a stack. Space has been reserved for the building of additional kilns later. The railroad siding runs into the storage yard and cars can be loaded from both sides.

The officers of the company include, president, H. B. Cameron, secretary, H. B. Galbreath, treasurer, H. W. Westhafer and manager, E. W. McClave.

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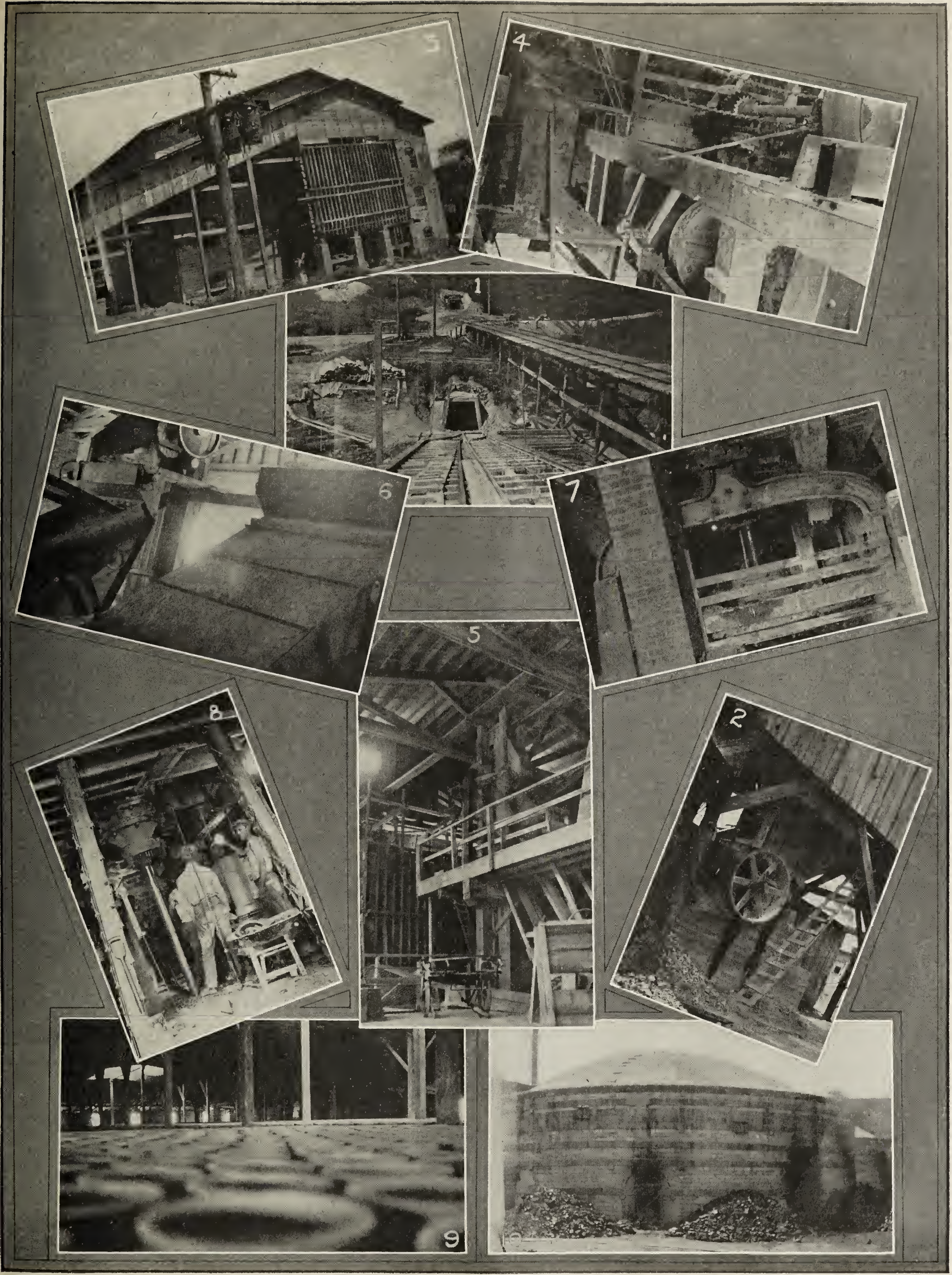
WATERPROOFING BRICK WALLS

According to figures obtained by the Common Brick Manufacturers Association of California, the inside of the exterior walls of an ordinary six room house can be waterproofed at a total cost of $25. This waterproofing is accomplished with a mixture of asphalt tar mixed with an equal amount of distillate and applied with an ordinary whitewash brush. This eliminates the necessity of furring and assures the builder of an absolutely dry wall.



A SEWER PIPE PLANT IN PICTURES

View No. 1 Shows the Hillside Mine with Its Two Entries, Lying Adjacent to the Plant. The Top Entrance Leads into the Coal Mine, and the Lower One Is the Entrance to the Clay Mine. The Coal Is Used in Firing the Boilers and the Clay in the Manufacture of Sewer Pipe. No. 2 Shows a Single Roll Crusher Which Is Used for the Preliminary Breaking Up of the Raw Material. No. 3 Shows the Housing over a Belt Conveyor Which Elevates the Crushed Clay into the Bin Shown from Which Plate Feeders Mechanically Feed Clay into the Dry Pan. At the Extreme Left in Picture No. 4 Can Be Seen Part of the Plate Feeder and Chute. This View Also Shows Part of the Dry Pan into Which the Clay Is Fed. No. 5 In the Lower Portion of This Picture Is Shown a Special Truck Used for Conveying Sewer Pipe from the Press and Dryers. In the Background May Be Seen the Crushed Clay Storage Bins, and on the Upper Floor the Screens Are Located. The Wood Shaft in the Center Houses a Bucket Elevator. No. 6 Gives a View of the Mechanical Screens in Use. No. 7 Shows One of the Wet Pans. The Sewer Pipe Press Shown in No. 8 Turns Out the Company's Entire Production. No. 9 Is a View of the Dryer Floor and Also Gives a Good Idea of the Structural Features of the Plant Which Is a Mill Constructed Building. No. 10 Shows the Type of Round Down-Draft Kiln Used for Burning The Sewer Pipe.

Methods of Maintaining Production

An Excellent Discussion Showing How the Plant Personnel May Be Interested to Keep Production at Levels Desired—Human Element Is Most Important

M. R. Watson

Vice-president, B. Mifflin Hood Brick Co., Atlanta, Ga.

THIS SUBJECT might be divided into two major divisions —Human Element in maintaining production and Mechanical Element in maintaining production. Of the two, it is the writers opinion that the Human Element is the most important, because it is usually the most neglected and it does not necessitate any outlay of capital, but merely means putting the right man in the right place and giving him the required information.

The Human Element

This has been a hobby with the writer for the past ten years and he finds it a most interesting study, whether it be in a brick plant, construction work, office management, or whatnot; and the conclusions are that one of the strongest human factors, if not the strongest, is the love embedded in all men's hearts for a race or contest, whether it be horse races, automobile races, baseball games or the number of good brick that can be made out of a machine per day, per week or per month as compared to what was made for the same period last year or for the last ten years considering costs and quality.

In first considering this question, you run into the snag of how much information you can afford to give your superintendent and foreman of your different departments. For convenience let us divide the brick plant into six different departments, namely

Clay Winning,	Burning,
Manufacturing,	Assorting and Drawing,
Setting,	Loading and Delivering.

Our conclusions are that you can afford to tell the superintendent and foreman the labor cost and fuel cost, and if you have the right kind of superintendent, you should give him the supply and repair cost, as he himself is responsible, to a large extent, for these two items. That is, if he has a man on the shovel or on any other piece of machinery, that is careless and the repairs, therefore, run high, he should begin to investigate and see whether the man on the shovel is the right man or whether the machine itself is the right machine. Therefore, as stated above, to a certain extent repairs and supplies should be held directly against the record of the superintendent.

Sets Task for Plant

On our plants we have been able to give the superintendent the labor cost and fuel cost figures, together with production figures. We have also set a task for each of the plants for the year and by plotting this task, say as a red line, and then plotting the actual production in another color ink, we can tell from month to month whether we are keeping up with the task and the question is common around the plants whether the plant, at that time, is above the red line. Above the red line is considered as doing good work and below being considered as failing to come up to the allotted task. If this can be done by plotting a chart large enough to be hung up so every employe may know what is being accomplished, it will create a greater spirit of rivalry within the plant, which is one to be very much desired and will prove beneficial. To carry this idea further, if you could manage a bonus or additional compensation, based on being above the red line, it will be obliged to cause a good spirit within the plant and prove benefical to the owner as well as the employes. I suppose, of course, this is being done in some clay plants at present and the writer claims no originality for this thought.

Instill Spirit of Rivalry

Omitting the bonus part and just giving them the information is good, as it affects the above mentioned factor in every man's heart, namely, love of contest. As an instance of this, the writer knows of a plant that set a task for itself of 10,000,000 brick per annum, altho its output the year previous was only 8,400,000. The superintendent and mechanic were working very hard to get this 10,000,000 task. Along about the first of June it was shown that it would require about 700,000 to get their 5,000,000 by the first day of July. The whole plant was more or less on edge to put it over. On the 20th of June they required about 40,000 for the half year task and that day the superintendent put a notice like this in the machine room:

> **"TASK MADE TODAY MEANS FIVE MILLION BRICK, OR SIX HUNDRED AND THIRTY MILES OF BRICK, AND A CIGAR FOR EVERY MAN ON THE PLANT."**

You can bet your life they made the task, thereby getting five million brick by June 21, approximately nine days ahead of the time and the plant, that day, was more or less like a picnic.

We might go on and give several other instances along this line but no doubt each of you men have had similar experiences which goes to prove that where possible, it is very beneficial to create a spirit of rivalry within the plant.

Be Sure to Get Full Production

The writer has been on many brick plants and carelessly asked the superintendent what his production was. Invariably the answer was given based on what the machine is capable of producing per day and very seldom given on basis of actual monthly production. This is usually a sign that the superintendent is not given his production records and I expect that if this superintendent were told what his actual production was, he would be very much surprised and chagrined. It is a proven fact that it is very easy for a 40,000 brick per day plant to make only five to six hundred thousand per month whereas it should produce a million per month. Under such conditions, where the superintendent is kept ignorant except what information he takes the trouble to get himself, I do not think that he should be held responsible but believe that a large part of the fault is to be blamed on the policy of the company, which evidently rules

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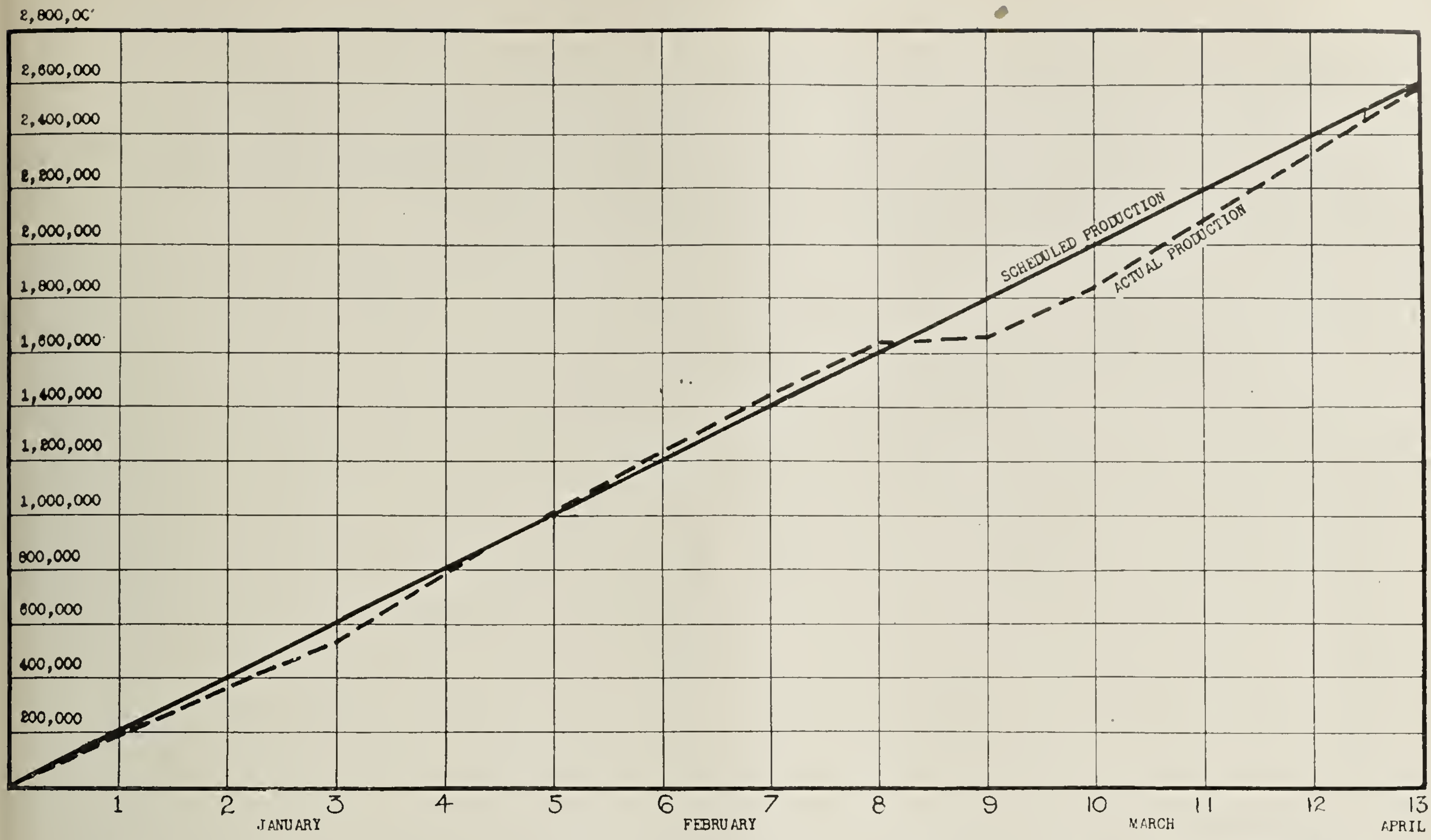
Editor's Note—This paper was read before a meeting of the Southern Division, the American Face Brick Association.



A Chart Like This Set Up in the Plant Where Workmen Can See It Stimulates Their Interest in Their Work. The Figures on the Left Indicate Number of Brick. Figures at Bottom Designate Week-Periods. The Straight Line Shows the Production Desired and the Dotted Line, Which Shows Production Actually Obtained, Should Follow the Schedule Line Closely. During the Ninth Week the Plant Apparently Was Shut Down or Practically No Brick Were Produced. The Figures Are Hypothetical.

that production and cost reports are not to be told to the superintendent, altho he is the man that is directly responsible for both. However, when production and cost reports are given to the superintendent, and he, in turn, does not secure the cooperation of each of his head men, then he is losing a very good opportunity to increase his production at no additional cost, by creating interest and rivalry within his plant.

Up to this point most of this article has been on the subject of quantity production, always considering the quality. However, perhaps it will be well to go into the cost of production which is so materially affected by making the task.

Payrolls Show Production Figures

On all of our plants we have a payroll system whereby every month we receive, at the main office, the payrolls made up in six departments, same as given in the first part of this paper, namely, Clay Winning, Manufacturing, Setting, Burning, Assorting and Drawing, and Loading and Delivering. Therefore, our payrolls come in semi-monthly giving the total number of men who work in each of the six departments during the period covered by payroll and the total amount of money spent by each department for labor, together with the total accomplishment of each department. I mean by this, that the payrolls will show the total number of cars of clay mined, which is equivalent to so many thousand brick and the total labor cost for clay winning, similarly the total number of brick produced, machine count, and likewise the total labor cost in manufacturing department, and so on down thru the six departments. This makes it very easy for each foreman to ask of the yard timekeeper each payroll date, what did his department do for the past payroll and at what labor cost. For instance if they have manufactured 450,000 brick and the labor cost is $500, the foreman has reasons to feel that his department did not show 100 per cent. efficiency during the last period, as it is our opinion that the manufacturing department should operate at less than one dollar per thousand. We are now trying to carry this idea a little further by agreeing with the department heads as to what should be their cost, from a labor standpoint, and then giving them a part of what they save below this cost. This is somewhat of a new idea and we are just starting to work it out.

Bonus Is Aid to Production

Therefore, I am not able to actually report result of same but to be a little more explicit, let us take one case for example. One of our plants has been manufacturing brick and the labor cost for manufacture has been running over a dollar, around $1.30 per thousand. We have a working arrangement with the superintendent and foreman in charge of the manufacturing department whereby if they make brick for less than one dollar per thousand, the superintendent and foreman are to receive half of what they save. Therefore, if they manufacture brick for 80 cents per thousand and make 800,000 brick per month, they will have saved us $160 below what we figured manufacturing labor cost to be and, therefore, each would receive half of $80, or $40. This idea has an unlimited field of operation and I believe that if it is worked thoroly and squarely, will mean a considerable saving to the owners and will create the interest of the foreman, as we readily realize that everybody is a human being and was a human being before he was anything else. Naturally when you get a proposition that will mean a personal gain to the foreman and spur him on to be efficient and economical, you may expect results. The only danger being that this will develop a tendency to work for quantity rather than quality, which, of course, is something that has to be watched very closely and the first inclination along this line has to be dealt with rather severely so as to put a stop to carelessness in quality.

No "General" Labor Item in Costs

It might be well, at this point, to call attention to several other policies we have regarding our payroll. First among these is that we do not have any general labor item, as we consider that every man working on the yard is working in one of the six departments. For instance if we have a man carrying fuel for fires, his time is charged to burning, and is a labor charge against burning. If we have a man or a group of men on a machine that is broken down, it is charged to manufacturing repairs but this is a labor charge against manufacturing and is so recorded.

Another fact that is well worth considering is that these cost figures are turned in by the foremen themselves and, therefore, they cannot question their accuracy.

Must Know Cost to Reduce It

In summing up the above, it is the major thought that the men on the plant cannot be expected to reduce labor cost unless they know it, and they cannot know it, unless you tell them, as 99 times out of 100 their method of figuring cost is way off and will lead to erroneous conclusions. Each of you men have, no doubt, had experiences along this line where a superintendent will pull out a pencil and count how many men he should have manufacturing, and how much he should produce a day, thereby arriving at his unit cost. At the end of the month, however, the actual unit cost is a very different figure from the one he has told you it should be.

It is very essential that the owner know his cost but we believe that these costs are affected more by the superintendent knowing them than by the owner knowing them, as he is the man, after all, down in the hole doing the work and will affect this cost from day to day, more than the owner will. The superintendent, in turn, should give the departmental costs to the man in charge of each department. No doubt, there are some men present who will say that they have not, as yet, a foreman in charge of each department on their plant. This is true on a great many plants, in a way, but I wonder if there is a plant that hasn't got what they call a head loader, a man, who, when they want something done, is called in and told what is wanted, rather than calling in the entire loading crew. This is what we mean by speaking of department heads, although sometimes it might be a $1.50 per day negro. You can get him interested in the race as well as a $250 foreman.

Steady Production Most Important

Experience has shown that absolutely the most important factor affecting cost is, not necessarily the number of men used or not used, but in making the task every day, six days a week, 28 days a month for every month that you run, and when you are not making brick, do not make payroll. I have been on plants which, when they were running, were about as efficient as a plant could be, but when they were not running, still seemed to have just about the same payroll, as the superintendent always felt that there were odd jobs that should be done and selected these days to do them. It is my opinion that the so-called odd jobs are the damnation of a brick plant and are something that must be dealt with very sternly. If the plant is kept up from day to day, and each department is made to clean up its mess from day to day, you will find that the odd jobs are materially reduced. This is one of the hardest things that I know of to get the superintendents to realize.

Handling Labor Correctly

Another fault that is noticed to be somewhat common among the plants, especially those that are not properly balanced, is that the superintendent will take, for instance, the making crew and put the casing on top of an up-draft kiln or do some other odd job, after they have made the task. This, I believe to be an error in judgment as we have never seen this idea worked successfully. We have in mind one plant that we know of that had not quite been completed and the management tried the system of making as many brick as possible each day, then taking the making crew over to build kilns or do the other work necessary to complete the plant. He found, however, at the end that he had spent a great deal more on labor than had been estimated and he eventually accounted for it in the fact that he used the wrong system, as it would have been a great deal cheaper to have hired an extra crew and kept them on doing the construction work, letting his making crew lay off when the machine was stopped.

Overhead Raises the Cost

As stated above, all cost items are materially affected by producing or not producing your task and that famous old item, called overhead, is especially affected. A striking example of this was given in the July 24, 1923 issue of the Brick and Clay Record. When a plant, capable of manufacturing five million brick per year, produced 4,500,000 brick its cost was $2.93 per thousand and when it only produced 3,000,000 brick per year, the overhead unit cost jumped up to $4.40 per thousand. This can very easily be done on any plant if not watched and if results not known from week to week. You will see from the above that, altho the plant only fell off 4,000,000 brick per day in its production, the overhead unit cost jumped up $1.50 per thousand, which is probably more than the average common brick plant nets per thousand profit.

We believe that the largest single factor affecting the cost of manufacturing, whether it be labor cost, repair and supply cost or overhead cost, is in maintaining production up to the alloted task and we believe that the most economical and effective way of maintaining your production is by creating a spirit of rivalry within the plant, in letting the men know what you expect of them and showing them how close they come to fulfilling your expectations. It is advisable to set tasks that are possible and as a matter of fact, probable, if the plant is properly run. I mean by this, we have set tasks on our plants that will allow approximately 20 hours of lost time per month and we consider that this is sufficient allowance for break downs. Our results this year go to prove this a fact.

The Mechanical Element

This is an old subject and columns have been written on it. Whether it be a brick plant or some other industry, the main thing to do is to keep your machinery up by constantly watching and, altho we title this Mechanical Element in Maintaining Production, it is quite often found that the Human Element in this department is responsible for the production, since, if your mechanic or superintendent is a man that does not worry until the machine is actually down, then spends considerable money in wiring and expressing repair parts so as to avoid losing production, such methods will soon tell in counting cost. Whereas if it should be the policy of the plant to keep on hand, at all times, repair parts* for machinery that is liable to break or wear out, so that immediately upon notice that machine is in trouble or distress, new parts can be put in from your repair part stock room, you will notice very little falling off in your production.

Repair Parts Help to Maintain Production

The writer has been on plants, as a matter of fact, has worked out on his own plants a system of having the foreman or superintendent turn in every day a report of the supplies and repairs used and each week the superintendent is told the supply and repair cost per thousand, in the six departments. Altho this information is not especially reliable from week to week, as some weeks rather expensive parts have to be replaced, which makes the repair item run large, figuring from month to month, however, it is very valuable information.

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*Editor's Note—See article in Brick & Clay Record, September 4, 1923.

It also gives you a very easy way of determining how long repair parts last.

Watch Your Belting

One of the large items in the repair and supply column for brickyards is belting. Strange as it may be, it is found to be the most neglected item on most plants, as the belts on any brick plant are subjected to most trying conditions and usage and are also badly mistreated. A little study of this subject will give you the information that whenever you see a pulley that is black with some type of cheap belt dressing or tar, as is quite often used in brick plants, you may expect the belt running on that pulley to give a very little use due to the fact that the dressing on the pulley has a tendency to pull the plies of the belt apart. It is the consensus of opinion of belt manufacturers that the amount of belt dressing needed on a belt is just sufficient to keep the pulley from looking glossy.

Watch Cost of Parts

The writer has often intended to figure out what it would cost to build a new brick machine or dry pan by buying repair parts for same, but, roughly speaking, it would be safe to say that it would cost ten times as much as buying the machine itself outright. This would seem to warrant a very thoro investigation of repair part prices before the purchase of machinery, as we notice that some manufacturers have the habit of making enormous charges for repair parts whereas some others are inclined to get this price somewhere near right.

Another item that might be worthy of mentioning, as it is always present with the brick plant man, is that of cutting wires. We have made what we consider a happy solution of this annoying problem, namely, we have asked for bids and awarded the contract to one manufacturer for furnishing us cutting wires for all of our plants. Our order calls for the yearly requirements to be shipped at the rate of so many per month without further instructions. Therefore, monthly at each of our plants, we receive a shipment of cutting wires which will last us until the next shipment is received. In placing this order we ordered a little more than our actual monthly requirements so as to play safe. This method of handling this problem has been very satisfactory and has relieved the superintendent of this trouble.

Ample Storage of Greatest Importance

If we should attempt to list the important mechanical factors necessary in maintaining production, in the order of their relative importance, we could say that ample storage bins for both unground and ground clay or shale is the first, as we believe this to be more important and more economical than trying to put in sufficient grinding equipment to grind wet shale. This is especially true where the plant is fortunate enough to have individual motors rather than drive shaft so that the dry pan can be run whenever necessary without using power enough to run the entire plant.

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HOLLOW TILE AND CONCRETE FLOORS PROVE SAFE

Some few months ago the Bureau of Standards at Washington, D. C., conducted an investigation into the stresses in certain of the floor panels of the Arlington Building, Washington.

This building was designed for use as a hotel, but was purchased by the government and occupied by a branch of the Treasury Department. This change of occupancy considerably increased the live load which was taken care of by an additional layer of concrete on top of the floor panels. The panels are constructed of hollow tile and reinforced concrete supported on reinforced concrete beams. The tests are of unusual interest because they were among the first made on this type of construction and because of the provision above mentioned for carrying the additional load.

The test loads, consisting of bags of cement, were designed to produce the maximum positive and negative moments. Strain measurements were taken of the concrete and the reinforcing steel of the slabs and girders. In addition, the deflections of the slab were measured, and it was found that the maximum stresses were developed at the positions of negative moment in the vicinity of the supporting beams.

The beams at the edges of the panels offered so little resistance to torsion that the stresses in the steel across these beams, due to negative moment, were but little affected by transfer of load between adjacent panels.

While under load, the effect of time was very pronounced during the first 20 hours and comparatively insignificant later. The increase in the deformation, due to continued loading, was greater in the reinforcement than in the concrete. The cracking of the concrete and the resulting great increase of the stresses in the reinforcing steel show that at first the concrete carried a considerable portion of the tensile stresses.

The moment coefficients were generally small, and the Bureau does not suggest them for use in design, but simply to show the relative amount of the bending moment carried in the two directions. The effect on the moment coefficient of an increase in ratio of length to width of the panel was a rapid increase of both positive and negative moments in the direction of the short span and a less rapid decrease of both moments in the direction of the long span. The factor of safety of the structure was apparently greater than 2.

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OUTLOOK FOR MORE FOREIGN BUSINESS

C. H. Cannafax, of New York, following a survey of industrial conditions in a number of southern cities for the foreign trade bureau of the Philadelphia Commercial Museum, has announced that the Philadelphia bureau will establish in Atlanta, Ga., during the early part of 1924, a southern branch office to look after foreign trade interests for various larger industries in the Atlanta industrial territory.

So far as the brick industries of the district are concerned the principal development in this regard has been with Latin-American countries, with the present year proving the largest export year the industry in the South has ever experienced. Broader development of the trade in other foreign markets is expected to follow the establishment of the Atlanta southern office next year, that will insure a steady market for southern manufactured brick and clay products, both domestically and abroad.

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SUPERINTENDENTS TO MEET OCTOBER 13

A meeting of the recently organized club composed of paving brick superintendents will be held in Independence, Kansas, October 13, 1923. It is expected that about 95 per cent. of the plants whose superintendents are eligible to membership in this club, will be represented. Arrangements are being made to take care of a representative from every paving brick plant who is a member of the Western Paving Brick Manufacturers Association. An interesting program has been planned.

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SIMPLIFICATION OF CLAY PRODUCTS

The preliminary conference of manufacturers and engineers held on April 23, 1923, in cooperation with the Department of Commerce, Division of Simplified Practice, resulted in the determination to survey the industry for the purpose of eliminating many needless sizes and setting up dimensional standards for sewer pipe, drain tile, flue linings and wall coping. At such time as the necessary data has been gathered and tabulated a general meeting of all interests will be called for final action.

Quarrying Material for Silica Brick

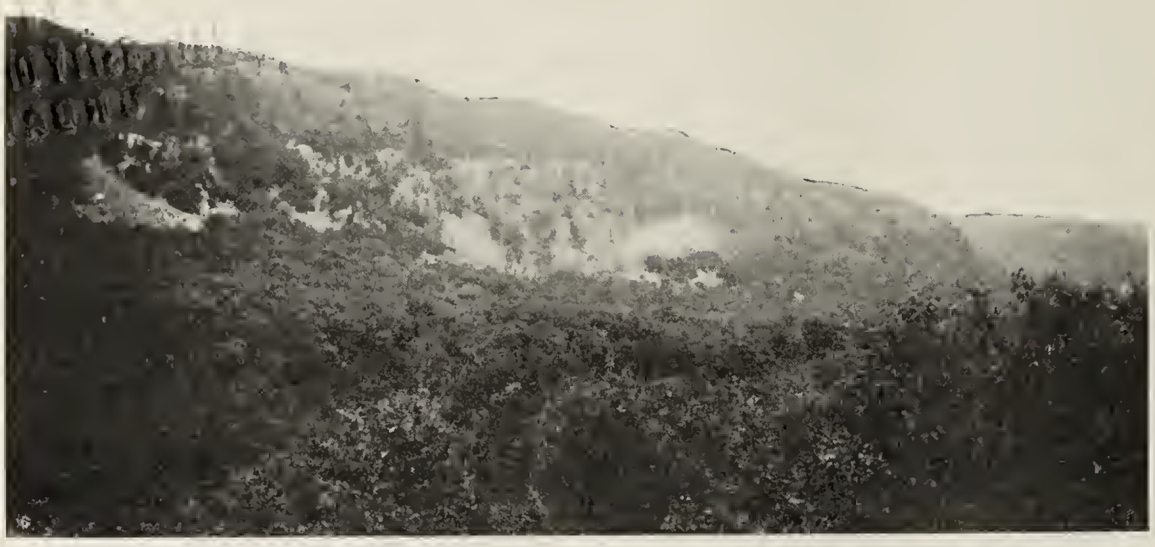


Fig. 1. View of Quartzite Cliff at Devils Lake, Wis. Taken Across Valley from Crusher Plant. The Puff of White Smoke Is from a Shot in the Quarry Ledge

Describes Equipment Necessary to Operate Quarry Successfully—Methods of Operating Different Types of Pits

E. E. Ayars

Chairman, Refractories Division American Ceramic Society

QUARTZITE or ganister rock is found in several localities in the United States. Pennsylvania and Wisconsin both have inexhaustible deposits but due, more or less, to the greater demand for silica brick in the east, Pennsylvania ganister quarries furnish one-half of the country's requirements, while Wisconsin contributes one-fifth of the total tonnage of the country. The ganister of Wisconsin is a hard dense quartzite whose origin has been found to be in great beds of sea sand. The sand grains are cemented together by pure secondary silica which is known as interstitial quartz. The metamorphosis or cementation process was so complete that it is difficult to distinguish any sand grains in Wisconsin ganister and the fracture is always across the grains, never around them, in good quartzite. Some quartzites which are especially pure are white in color, but the metamorphosis of such deposits is rarely very complete. The usual colors found in most deposits are a brownish gray, and pink.

Rock Often Quarried from Floes

Many Pennsylvania operators quarry their rock from great floes, formed by the breaking up of the quartzite cliffs. Wisconsin quarries are working in ledge rock exclusively, altho in the opening of an occasional quarry it has been found expedient to work out the talus slope of floe rock against the ledge to provide a proper quarry floor. It has been argued that silica brick made from ledge rock was inferior to that made from the weathered floe rock or from a mixture of the two. It is believed that this statement was born of prejudice, altho as a tradition it gained some hold on certain silica brick consumers. Undoubtedly the iron content of some quartzites is reduced by weathering in the floes, but it is a process which has taken centuries to accomplish.

Floe rock is more difficult to reduce with dynamite and a sledge than a similar piece of ledge rock. Weathering seems to leave the rock less brittle and it absorbs the shock given by dynamite or a blow from a hammer so that much heavier charges are necessary, and heavy sledging required to break it down.

Breaking Down Large Boulders

The usual method of breaking down large boulders is to drill them with a jackhammer drill and shoot with sufficient 40 per cent. ammonia dynamite to split them into several small pieces. The amount of explosive to use in each case is difficult to judge and many times half of the boulder will fly clear of the quarry floor and be lost, or the shot will only serve to split the boulder in two or three large pieces, which must be "mudcapped" to reduce them to sledging size. Some operators make it a rule to "mudcap" all boulders up to such a size that will require not more than ten pounds of dynamite and drill any boulders larger than this, while some quarrymen drill boulders which can be "mudcapped" with even as little as three or four pounds of dynamite. It is usually cheaper to "mudcap" boulders up to those requiring ten to twelve pounds of dynamite than it is to "blockhole" the boulders and use a small charge. Where drilling facilities are exceptional this rule may require revision but will hold in the majority of cases.

"Mudcapping" Boulders

The usual strength of "mudcapping" powder is either 50 per cent. nitro-glycerine or 60 per cent. ammonia dynamite. These two strengths are equally well suited, altho the ammonia dynamite is easier to handle and does not cause such violent headaches for the powder man as the straight nitroglycerine. The "mudcap" is applied to the boulder in such a fashion that the blow of the charge will be delivered at right angles to the bedding planes in the rock. The surface is cleaned of dirt or moss and enough dynamite pulverized and pressed in tight around the unbroken cartridges to make the shot solid and leave no air pockets. A properly capped fuse is placed in one unbroken cartridge and the mud or wet sticky clay is then applied, the fuse sticking out thru the clay. When all shots are placed the free end of each fuse is cut open to expose the powder to instant ignition when the match is applied. One man can "spit" from six to ten fuses safely provided they are close together. The usual length of such fuses is 22 inches and the class of fuse commonly employed is single tape safety fuse, which may be used in either wet or dry work. A blasting machine is rarely used for firing "mudcaps" as too much time is required to make the connections and electric blasting caps are more expensive than the usual fuse and cap. If several large boulders lying together can be fired to better advantage at the same instant, the machine will accomplish this. "Mudcaps" are sometimes misplaced before firing by flying pieces of stone, or fuses plucked out to explode in the air and it is necessary to inspect carefully the shots after the smoke has cleared for misfires to do away with possible accident. It is not safe to count the shots if there are more than a dozen, altho careful attention to the explosions will enable one to tell whether any caps go off in the air and indicate a misfire.

Opening a New Quarry

When the blasting of the desired boulders is completed the quarrymen proceed to reduce the rock with sledges to what is termed "man size" rock, loading it in dump cars for delivery at the crusher.

In opening a new quarry many problems present themselves. The talus slopes in Wisconsin are not extensive enough to furnish an indefinite source of raw material and the tendency is to select a point, if possible, where the ledge rock may be reached with a minimum of effort and time. It is desirable to work out some talus in order to provide a quarry floor in front of the ledge and the rock in the talus furnishes some production while the tracks are being located and the quarry floor formed.

In locating the tracks and preparing the floor one of the most important considerations is proper drainage. Very often springs are encountered in the bottom of talus slopes and in the ledge and careful attention to the disposition of this water and surface water at the outset will avoid considerable expense later. The quarry floor should slope gently away from the face of the ledge and consist of loose finely broken stone so that water will not stand on the surface. If spring water is present in large quantities it should be led to the rim of the quarry floor thru a ditch which may be loosely filled with large broken stone. Tile are of little value owing to the liability of breakage when shots are made in the ledge.

Handling Dirt

The trackage both in the quarry and from the quarry to the crushing plant should be well drained and considered a permanent feature of the equipment. Poorly laid and drained tracks are a source of constant annoyance and often seriously hamper operations.

More or less dirt is usually encountered in working out a talus slope which must be handled to the edges of the floor, where it serves to extend the floor area. In wet weather this dirt is difficult to handle and the rock so easily contaminated by it that it is often out of the question to work under such conditions. The relatively small amount of dirt and the number of embedded boulders eliminates handling with a steam shovel, and quarrymen cannot get the rock out on a tonnage basis. As a consequence the work is usually done by day laborers who load enough rock during a shift to bring the cost of dirt handling very low.

Laying Out Trackage

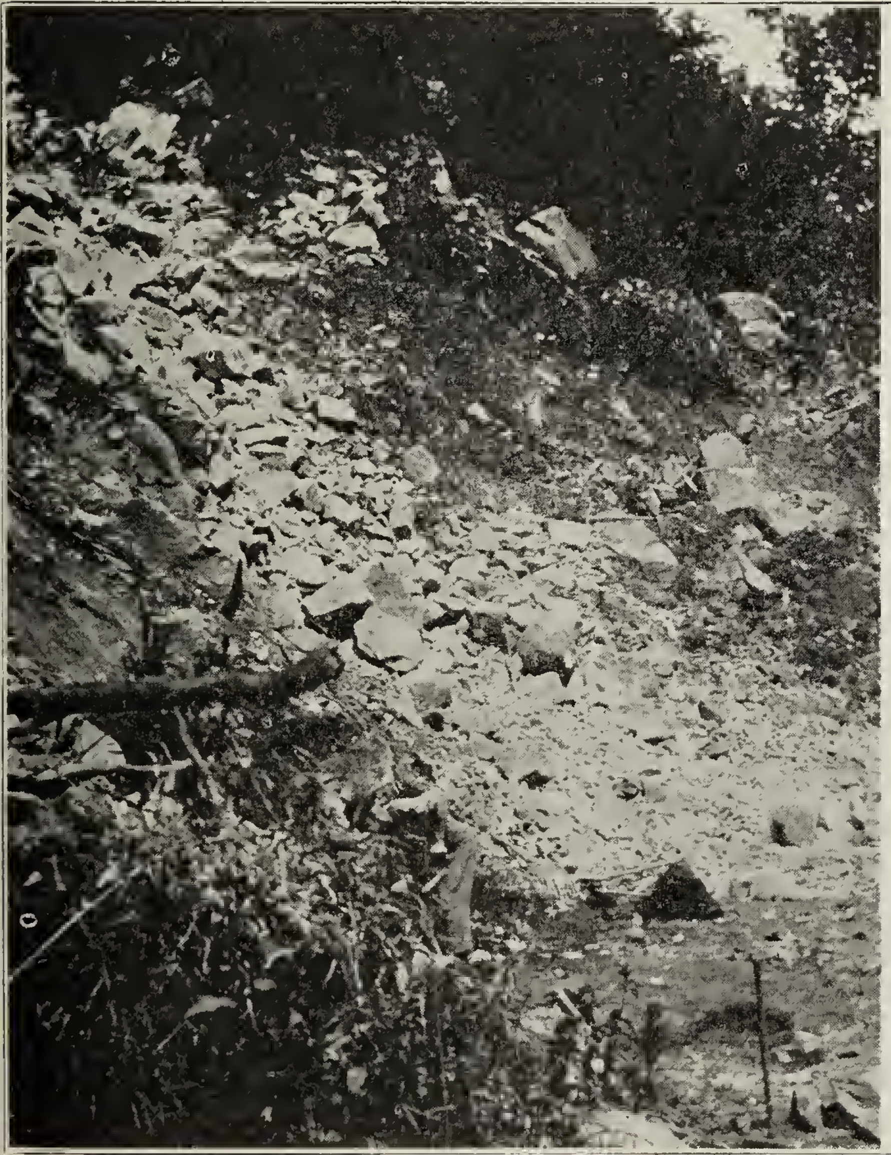
The most satisfactory system of trackage consists of a permanent main narrow gage line extending the whole width of the quarry floor near its outer edge from which several switches take off toward the quarry face. This main line, which connects the quarry and crusher plant, should be laid with fairly heavy rails, while the switches to each loading pit may be lighter and constructed in sections so as to be readily extended or taken up.

In laying out the main line a passing track, for use in storing loads while a train is being made up, should be put in as near the quarry floor as possible. A dead head switch should also be provided for storage of the work car, portable machinery and empty rock cars.

Use Heavy Enough Rails

Switches and rail joints should be carefully lined up to reduce to a minimum the wear and tear on engine and cars. The size of rail depends on the character of the road bed, spacing of ties, and weight of engine used, but there should be a large margin of safety. 40 to 60 pound rails are much more readily kept in shape than smaller sizes. A 30 pound rail will support a 15 ton locomotive but is subject to constant repair and the heavier rail may be used to considerable advantage.

The type of power for haulage is determined by the conditions to be met. Many installations of gasoline locomotives



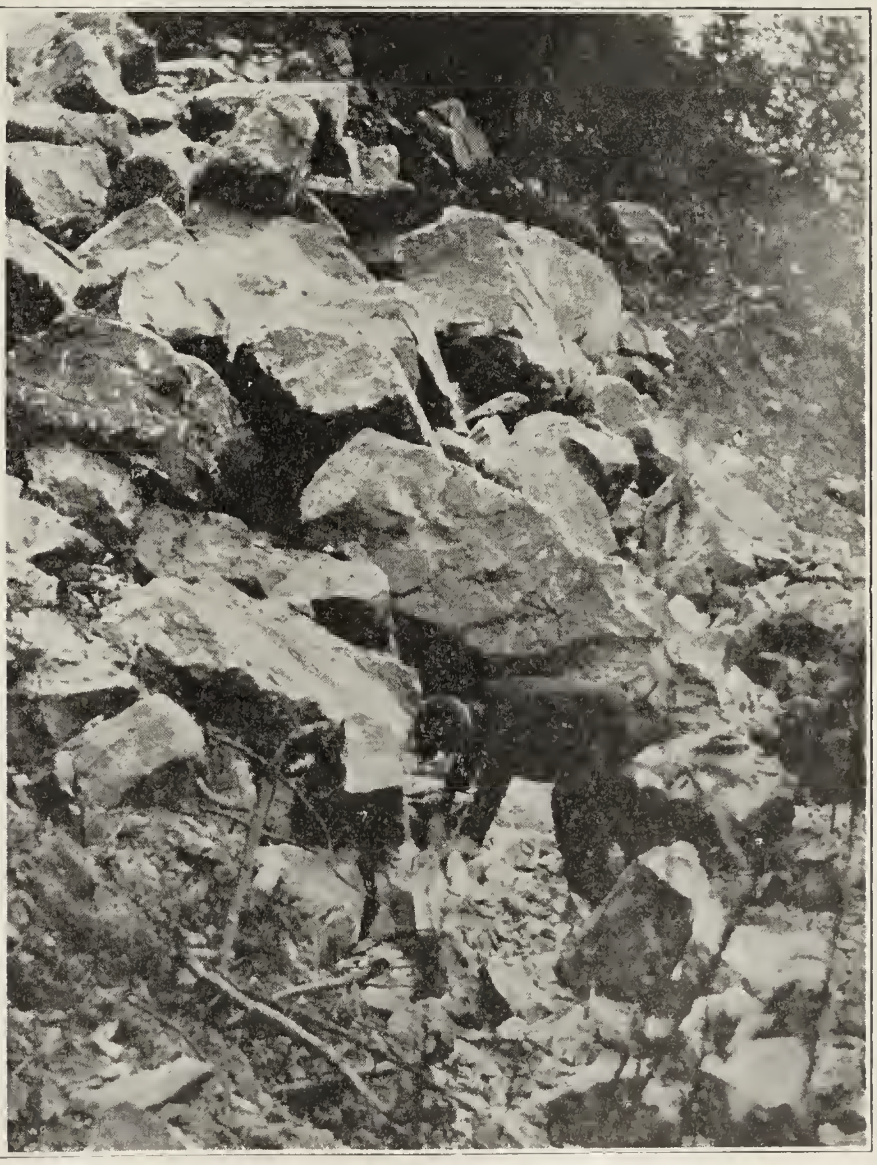


Fig. 2. Left. View of a Floe Which Is Being Worked Out to Expose Ledge. Fig. 3.—View of Floe Shown in Figure 2 Directly After a New Supply of Rock Had Been Barred Down. Compare Size of Boulders with Man Shown in Central Foreground

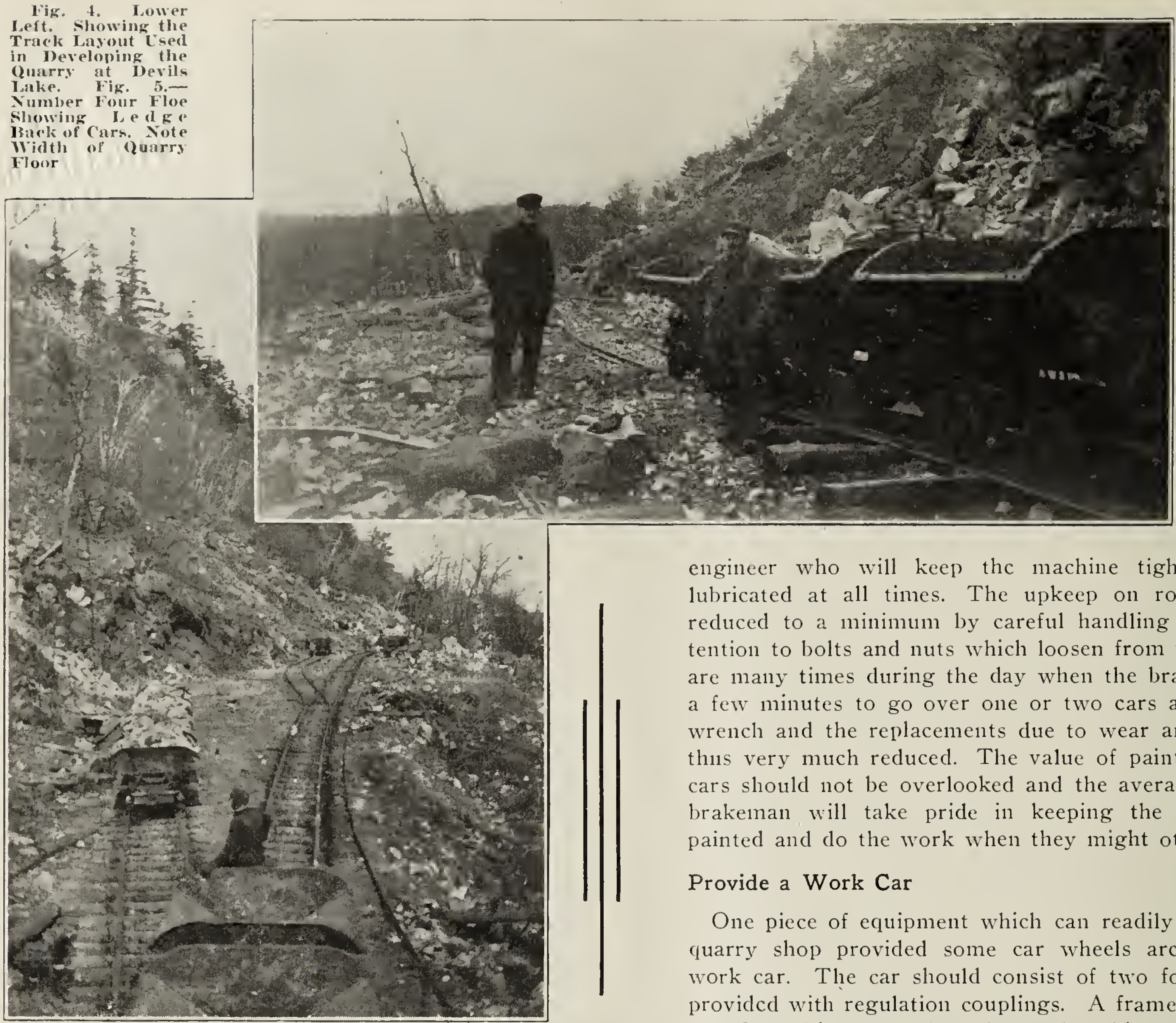


Fig. 4. Lower Left. Showing the Track Layout Used in Developing the Quarry at Devils Lake. Fig. 5.—Number Four Floe Showing Ledge Back of Cars. Note Width of Quarry Floor

are in use and are satisfactory for light work and short hauls. In cases where the crusher is some distance from the quarry and grades are encountered, a steam locomotive is commonly used. The four-coupled, saddle tank, oil burning locomotive of 15 tons weight or upward is a very satisfactory unit. The oil burning feature eliminates the necessity for a fireman and labor and equipment for handling coal to storage and tender. The oil is received in tank cars which are loaded and pumped to the storage tank near the narrow gage line. The pump, being located in the crusher plant power house, may be operated by the fireman-engineer in charge so that the cost of handling is very small.

Type of Rock Cars

Rock cars in common use are the side dump type of two yards capacity, constructed entirely of steel. The frame is built low, having a clearance of five inches. Each car has four chilled iron wheels, 14 inches in diameter, two of which are pinned to the axle, the other two having a bearing on the axle to insure free movement on curves. Each axle is supplied with two journal bearings on the frame, the top sections of which are bronze, the lower sections being oil filled caps to insure proper lubrication at all times. Cars are fitted with brakes to assist in handling trains on grades and eliminate the necessity of blocking while standing, either loaded or empty. The dumping feature is provided with a safety device to prevent accident while loading or moving a loaded car. The car described is very satisfactory for hand loading, but is liable to more or less damage with steam shovel loading, the dipper often striking the brake handle and putting it out of service.

Care of Locomotives

A 15 ton locomotive will handle 12 to 15 of these cars fully loaded where the grades do not exceed 1.5 per cent. and a 5 per cent. grade may be taken as the practical operating limit at greatly reduced loads. The wear and tear on a locomotive in quarry service is considerable and it pays to have a competent engineer who will keep the machine tight and properly lubricated at all times. The upkeep on rock cars can be reduced to a minimum by careful handling and regular attention to bolts and nuts which loosen from vibration. There are many times during the day when the brakeman can find a few minutes to go over one or two cars at a time with a wrench and the replacements due to wear and breakage are thus very much reduced. The value of paint on engine and cars should not be overlooked and the average engineer and brakeman will take pride in keeping the equipment well painted and do the work when they might otherwise be idle.

Provide a Work Car

One piece of equipment which can readily be made in the quarry shop provided some car wheels are available, is a work car. The car should consist of two four-wheel trucks provided with regulation couplings. A frame of timber properly floored is mounted on the trucks which are provided with bolsters to facilitate movement of the car around curves. This car is of considerable value in moving rails, ties and tools along the tracks or for bringing supplies to the quarry from the crusher plant.

Some operations are equipped with portable compressors to provide air for drilling. These should be mounted on trucks and moved about the quarry with the locomotive. In one instance a large compressor is installed at the crusher plant and the air piped to the quarry. There is also one portable compressor operated by a four cylinder gasoline engine which is mounted on trucks. In case of accident to the large compressor or pipe line or for small jobs this portable compressor is available at all times and will operate two small jackhammer drills.

Blacksmith Shop at Quarry

Much time and labor is saved by having a blacksmith shop and tool house at the quarry, instead of at the crusher plant, as the majority of all such work originates in the quarry. Rock drills usually require resharpening after every hole in quartzite. Picks, bars, and sledges require regular attention, and broken handles in shovels, stone forks, sledges and picks must be replaced. When the amount of drilling warrants it an automatic drill sharpener is desirable; much more uniform bits are produced and better service obtained from the steel. Hand sharpening is usually crude at best and uniform cutting cannot be expected, as the size, shape and temper of the bit varies considerably with each working.

Quartzite is a very hard substance and on account of its physical structure, difficult to drill. The logical method of drilling small holes is with a hollow chisel bit, the cuttings being expelled by air pressure. Greater drilling speed can be obtained in this manner but the flying dust is objectionable and drillers prefer the wet hole method. The drilling bits lose their cutting edge rapidly owing to the grinding and polishing action of the wet cuttings. A set of seven or eight bits is required to drill a 24 inch hole and they must be sharpened before using again.

Types of Drills

A 24 inch hole requires 20 to 35 minutes to drill, depending on the quality of steel and workmanship in starpening.

The "Star" and "Rose" bits are rarely used with quartzite, as they have a tendency to drill a three-cornered hole. The chisel bit drills a regular round hole which may be carried to any depth desired without jamming, provided no cracks or bedding seams are encountered to deflect the bit.

A valuable piece of equipment found in a quarry shop is the oxy-acetylene cutting and welding torch. It may be used for cutting rails and welding broken machine parts and in making repairs it is a great time saver on any plant.

The construction and location of magazines and thaw houses is regulated by law and in various states the specifications differ. The magazine is usually situated at least 1,500 feet from any dwelling or building used for manufacturing purposes and constructed of bullet-proof material. Fuses, caps and electric detonators are stored in a suitable building adjacent to the quarry, where the cutting and capping of fuses may be done. Caps and detonators are never stored with explosives.

The Thaw House Is Important

Thaw houses are used to store a day's supply of dynamite at the quarry, and local conditions dictate the type of installation to use. Often a well insulated building is suitable where weather conditions are not severe. Perhaps the most satisfactory unit is the hot water heated thaw house and its construction may be varied to most any desired requirement of capacity. The hot water is piped to the house from a small boiler or water back furnace located at such a distance as to admit no hazard to the explosive being stored.

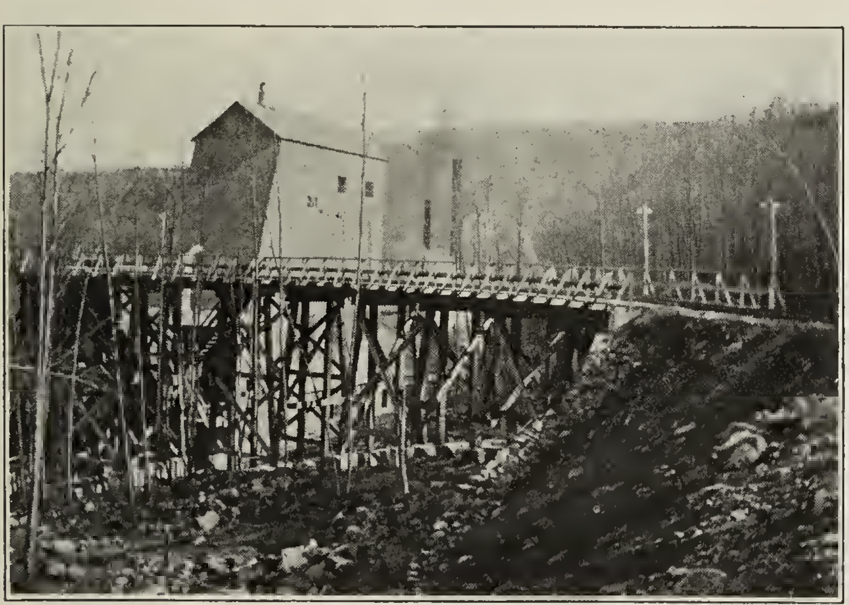


Fig. 6. The Crusher Plant and Trestle

The dynamite is usually arranged on open racks where the free circulation of warm air thaws it completely in a short time. The storage of caps and detonators is not permitted in thaw houses. Keys to magazines and thaw houses are entrusted only to one reliable man, who is held responsible for the safe keeping of all explosives in his charge. Many states require a monthly report of explosives stored and used which must show the name of the man in charge of storage and issuance of such materials. Irregularities in such reports are cause for drastic action.

Locating the Crushing Plant

The location of the crushing plant with respect to the quarry is dictated by local conditions, the most important of which are railroad facilities and the terrain of the country. Most quartzite quarry operators ship man-size rock direct from the quarry to the silica brick plant and this is perhaps the most economical course, altho the storage and rehandling of man-size rock at the plant is an expensive item of cost. In winter the storage pile freezes and stock handling becomes more difficult and costly.

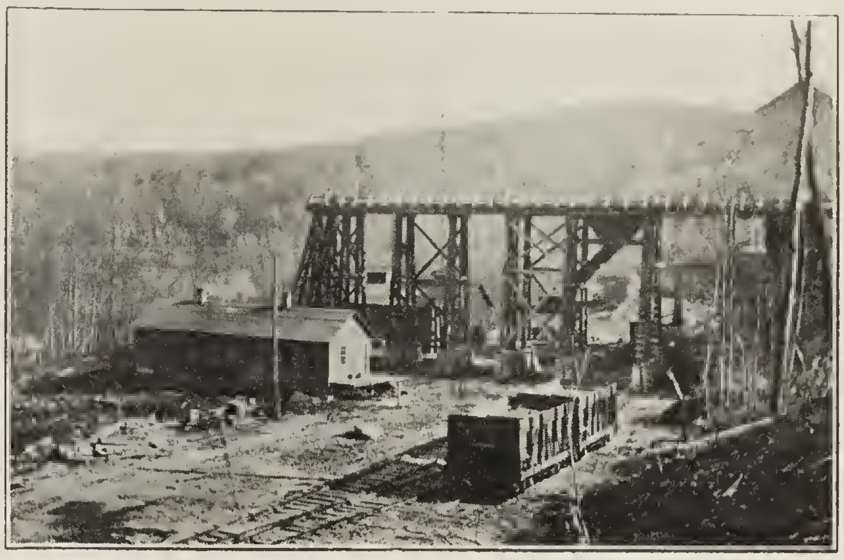


Fig. 7. A View Showing the End of the Trestle and the Plant Office of a Quarry at Devils Lake, Wis. Thru the Trestle Is Seen the Shop Building. In the Foreground Empty Car Storage Tracks and Two Empty Ore Cars Are Seen

Handling of crushed rock is less costly when a storage system is provided. The cars are unloaded into a hopper and the rock elevated to a distributing conveyor. Another conveyor located in a tunnel under storage pile returns the rock to the elevator and bins. Very little trouble is encountered with freezing in this installation.

Uses of Quartzite

Quartzite is used in some localities for road rock, concrete grouting and ballast. The finer sizes from one-quarter inch down find a ready market as a substitute for sand in concrete gutter, curb and sidewalk work. Such material can only be furnished from a crushing plant where sizing by screens is accomplished. The average silica brick works furnishes straight ground ganister to their brick customers for use in furnace work and this material can be prepared in a crushing plant to better advantage than in the brick plant. Such a combination of circumstances led one silica brick manufacturer to erect a crushing plant at the site of the quarry. The terrain was such that it appeared expedient to locate the crushing unit near the main line of the railroad as the building of a standard gage switch to the quarry would have demanded too much outlay. Accordingly, the crusher was placed on the hillside within easy reach of the quarry by narrow gage line and served by a standard gage switch approximately 1,500 feet long, including empty car storage. The narrow gage line followed the hillside from the crusher to the quarry and was approximately 3,000 feet in length. Three small cuts were necessary in its construction in order to provide the long easy grades desired. The crusher terminal of the line consisted of a trestle 45 feet in height which passed close to the main building, the rock being dumped into a chute leading to the breaker. This chute was built of heavy timber lined with railroad iron, and carefully enclosed and guarded to prevent accident from falling rock.

Types of Crushers

The crusher installed was a number six Gates gyratory, belt driven from a 75 horse power steam engine. A number six gyratory may be set to deliver two inch material but on account of irregularities in wear of parts the average may be taken as 2½ inches.

The breaker in general use in silica brick plants for crushing quartzite is the Champion 5X Swinging Jaw type. The capacity per unit of horsepower expended shows much in favor of the gyratory type and the cost of repairs per ton is about equal. From the standpoint of operation the gyratory type is more desirable than the swinging jaw type.

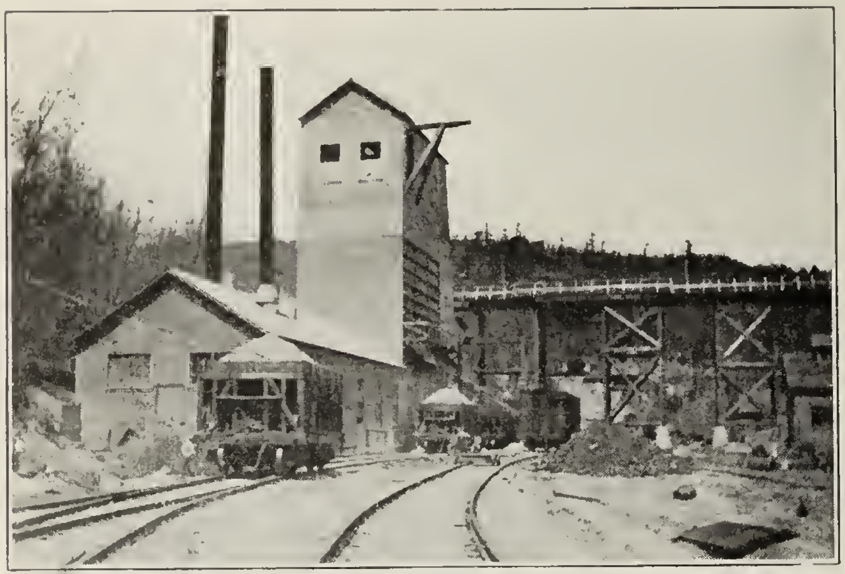


Fig. 8. Two Loaded Cars of Crushed Rock Are Seen in the Foreground. A Box Car Is Being Loaded with Fine Material on the Right Hand Track by Means of an Extension Chute. (Devils Lake, Wis., Quarry)

The jaw crusher makes a splintery product and there is constant danger to the operator from flying pieces of rock. The product from the gyratory is cubical in shape and the hazard from flying rock is very slight.

Jaw and Gyratory Crushers

The jaw crusher is made up of side plates and castings bolted together. These bolts loosen from vibration and the machine easily gets out of line. If allowed to run in this condition any length of time the crusher must be practically rebuilt to return it to balance.

The base of the gyratory is usually of a solid casting as are also the shell and spider. The joints are flanged and ground to insure a tight fit and the machine cannot get out of line.

Repairs on a gyratory are chiefly confined to replacement of the mantle and concaves. The mantle is most easily replaced. The spider is removed and the spindle hoisted clear of the eccentric and blocked up. Holes are provided near the top of the mantle for convenience in applying a sling. The worn mantle is removed, a new one applied and the spindle and spider reassembled.

Replacing Concaves

When new concaves are required the spider and spindle must be removed from the machine and the upper half of the shell taken off from the base. The worn concaves are removed from the shell and a new set fitted. Zinc is poured into the joints and behind the concaves to hold them in place. The shell should be heated slightly to insure a tight job, but too great pains with the heating may result in setting the concaves so solidly that they can hardly be removed with ordinary means. Allowance is made for setting out the concaves by removing and placing strips of steel behind each unit, after which the zinc is again poured in. An extra half inch of wear is thus secured. The mantle and concaves in general use are two per cent. manganese steel.

Eccentric Bearing Wears Quickly

The eccentric bearing located in the base of the machine requires rebabbitting at least every six months and sometimes oftener. This entails dropping the bottom off from the machine, and the removal of the ring gear and eccentric bearing which are riveted together. These parts are very heavy and for rapid handling an overhead trolley and chain hoist are required. The time consumed in fitting the babbitting mandril and cutting oil grooves is so great that most operators have an extra ring gear and eccentric on hand for immediate use. The worn eccentric may then be rebabbitted at leisure and held in readiness.

Proper Tools Should Be Supplied

Too much emphasis cannot be laid on the value of proper tools and time saving hoists and trolleys in making repairs to the gyratory crusher. Crushers of all types are usually set down in a hole with little thought for the inevitable time when they will require repair. Good working clearance all around and above the crusher is necessary for speedy repairs. The large trolley hoist usually provided should be high enough above the gyratory to allow for lifting the spindle clear of the machine. An auxiliary trolley hoist is handy for the handling of the zinc pot and small machine parts. All special tools used in repairs should be stored in one place and kept under lock and key to avoid delays when they are required.

The product from the gyratory drops thru a chute to a bucket elevator and is delivered to a revolving screen located over the bins. The elevator consists of a 20 inch eight ply rubber covered belt carrying 12 by 18 inch steel buckets set on 12 inch centers. The buckets are provided with flanged front forming a chute for the discharge of the succeeding bucket. This type is used very satisfactorily on vertical elevators, but is not recommended for inclined elevators on account of the tendency to spill past the end of the discharge chute.

The Revolving Screen

The revolving screen is of a standard design and consists of three sections. The first allows passage of material one-quarter inch and finer, the second passing from three-eighths to one inch material which is free from dust. The third passes one to two inch sizes and all larger than two inch material continues on thru the cylinder to the last bin. This gives four separations. Wear on the crusher produces variations in the quantity of each size of material produced, despite the arrangement for raising the head of the machine to compensate for wear. A new set of concaves will produce five per cent. of the total product as quarter inch and finer material, but as they wear this is reduced to two or three per cent. Three-eighths to one inch material reduces gradually from 18 per cent. to 12, while the one to two inch size varies from 45 to 30 per cent. The amount of material over two inches increases in proportion.

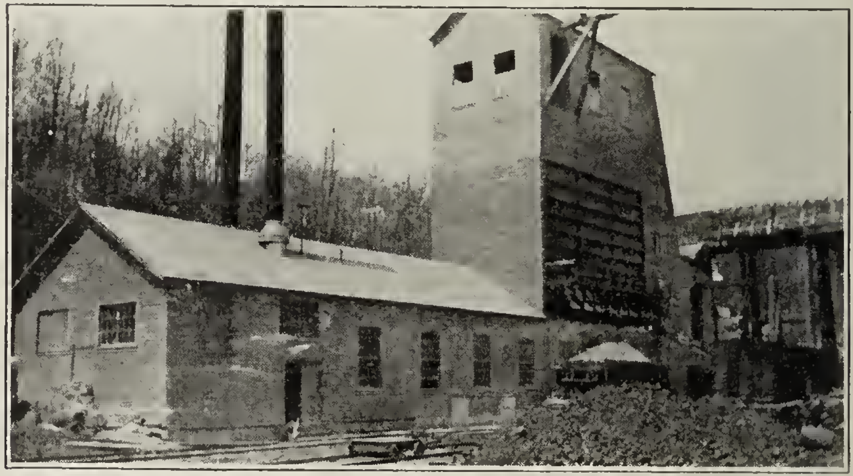
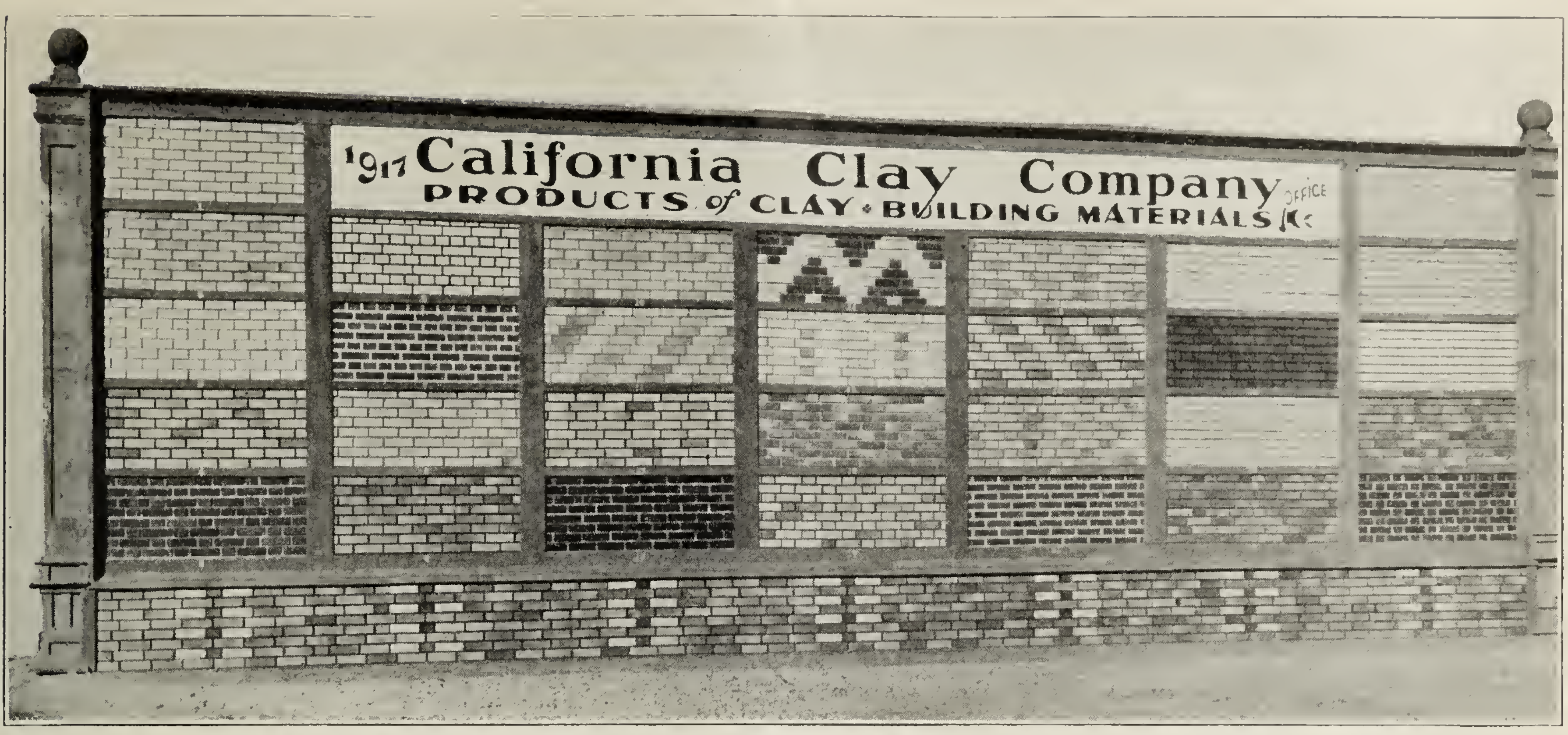


Fig. 9. Coal Storage Is Provided in the End of Boiler Room at Left of Picture. Note the Steel Bins and Loading Chutes at the Screen Room Door, Provision Was Made for Hoisting Repairs and an Overhead Trolley Installed to Make Handling Easy. A Similar Trolley Is Seen Spanning the Track at the Crusher Floor Doorway, Just Above the Box Car


1917 California Clay Company
PRODUCTS of CLAY • BUILDING MATERIALS &c
OFFICE

A Signboard of Actual Brick Built Up in Panels. All Shades and Textures Were Employed

The bins are of steel with sloping bottoms. Those provided for the two larger sizes of product have a capacity of three carloads each. The one inch bin holds two cars and the quarter inch bin one car. Loading is accomplished by means of chutes equipped with manually operated gates. The two larger sizes of product are shipped to the silica brick plant, while the two smaller sizes find a market for cement work.

Carry 100 Pounds Air Pressure

The engine room contains, in addition to the crusher engine, a two stage steam driven air compressor, which furnishes air for drilling in the quarry and operating small air tools about the plant. The air is piped from the plant to the quarry, a receiving tank being located at both ends of the line. The pressure carried is 100 pounds, and the transmission loss is so small that it is not noticeable. Provision is made for blowing off water from the line at all low spots and no difficulties are experienced from freezing if the line is cleared regularly.

Own Power Generated

No electric power was available and a direct current generator driven by steam engine was installed. All parts of the plant, including office, shop, oil house and round house, were wired.

Water is obtained from a deep well, the pump being located in the engine room. A large storage tank was placed on the side hill above the plant and a smaller tank set just outside the engine room. Water was piped to a standpipe outside the round house and to the office. All water lines were laid in insulated conduit to eliminate freezing.

A lathe, radial drill press, power saw and an emery wheel occupy one end of the engine room and constitute the machine shop equipment. They are driven by a direct current motor.

Two return tubular fire box boilers of 100 horsepower each make up the balance of the mill equipment.

Put Crusher at Brick Plant

The blacksmith shop was originally located at the mill level, but as the balance of the work was drill sharpening the equipment was moved to the round house to eliminate carrying of drills up and down the hill. A forge and anvil were left in the old shop for emergencies, and the building turned into a store house for supplies and repair parts.

The location of the crushing unit at the site of the quarry is hardly justified provided the entire product of the crusher is destined for the brick plant. However, the ready market for various sizes of material easily produced, together with certain local conditions, justified the installation of the plant described. The crushing may be done at the brick plant and the same storage system used as with the quarry crushing unit. This arrangement would show a considerable saving on investment, overhead and power.

One point very much in favor of brick plant crushing is the fact that there need be no sizing of material and subsequent loss of the fines to the brick manufacturing process. The grinding cost with two inch rock is considerably higher than it would be if the entire product of the crusher were fed to the pans.

* * *

A SPLENDID FACE BRICK SIGN

The California Clay Co. with headquarters at Sacramento, Cal., are credited with a unique exhibit of face brick as shown in the accompanying photograph. The display is in the form of a standard sign board, measuring approximately 40 feet long by 14 feet high. The superstructure is framed of heavy timbers and the brick panels are laid up with wood strips painted and sanded so as to represent correctly natural colored mortar. Various bonds have been worked out, as well as combinations of colors giving the whole an attractive and pleasing effect. The display is situated within the city of Sacramento but on one of the main California highways and has been accepted by architects and contractors in the vicinity of Northern California as an ideal method for the proper selection of color combinations and textures of face brick. Four 200-watt electric globes illuminate the sign during the evening hours. 3,500 face brick were used to make up the panels. Total weight of sign is approximately 12 tons. Detailed information on construction of the sign will be gladly furnished upon request addressed to the California Clay Co., P. O. Box 828, Sacramento.

* * *

FIRE BRICK IN THE CEMENT INDUSTRY

According to a bulletin recently issued by the Portland Cement Association, over 4,500,000 fire brick were used in 1922 in relining cement kilns. The market for fire brick in the cement industry has increased tremendously in the last five years and is growing at an ever increasing pace.

FIRE PREVENTION DAY, OCTOBER 9

Five hundred million dollars was the enormous toll taken by fire in the United States during the year 1922. This was made public recently in President Coolidge's proclamation setting aside October 9 as National Fire Prevention Day. This loss represents largely the annual fee exacted from the country for its tendency to build of materials which are not fire resisting. The President's proclamation, which brings out some startling facts, follows:

"With the approach of October 9, anniversary of the great Chicago fire, it is customary for the chief executive to direct attention each year to the enormous fire loss of the nation and to propose the observance of that date as National Fire Prevention Day.

"I am informed that the national fire loss for 1922 approximated 15,000 lives and somewhat more than $500,000,000. If this is correct, or even approximately correct, it indicates that the 1922 fire waste was the largest since 1906, when the fearful San Francisco conflagration brought the total to above $500,000,000. The fact that, with all our improvements of methods in most directions, the fire loss continues to mount upward year by year, places a striking point of interrogation opposite our claims of high national efficiency.

"I am informed that in 1912, which was not an exceptional year, the per capita fire loss of the country was $2.16 and that in 1922 it was $4.67. The importance of every possible measure to reduce this loss is so apparent as to require no argument. The specialists in this subject agree that probably the greater part of the loss is due to human factors, such as carelessness and moral hazards, another large portion to poor construction, inefficient enforcement of building regulations and the like. All of these are subject to correction thru proper procedures, and it is highly desirable that public attention be directed to them and every encouragement given to measures for lessening the fire menace.

"In view of these facts,

"Now, therefore, I, Calvin Coolidge, President of the United States, designate Tuesday, October 9, as National Fire Prevention Day, and recommend that it be observed in a manner most fitting. I particularly recommend the importance of the educational efforts thru the schools, industrial establishments and in the home."

* * *

Construction Council Holds First Meeting in New York

THE FIRST ANNUAL meeting of the American Construction Council, following its organization last year, was held September 21 at New York City. A number of interesting addresses were scheduled on the program and among these the address by Fred F. Moran, Managing Director Apprenticeship Commission of the New York Building Congress, which was entitled "Apprenticeship, Vocational Guidance and Craftsmanship in the Construction Industry" was probably the most important. Mr. Moran outlined the apprenticeship training system carried on by the New York construction interests in cooperation with union and educational authorities. Director J. C. Wright of the Federal Board for Vocational Education, and other educators, warmly commended the apprenticeship training activities of the construction industries.

Other addresses on the program were "Reduction of Unemployment in the Construction Industry" by A. P. Greensfelder of Fruin-Colnon Co., St. Louis; "The American Construction Council's Program on Research" by Dwight L. Hoopingarner, Chairman, of the Committee of the American Construction Council on Public Information and Research; "Possibilities of an International Exhibition of the Construction Industry in 1926" by Ernest T. Trigg, Chairman Executive Committee of the Sesqui-Centennial Exhibition Association; "A Look Into the Future of the American Construction Council" by E. J. Brunner, Editor Amercian Contractor.

Considerable surprise was exhibited by those in attendance when it was announced the president, Franklin D. Roosevelt, would not be in attendance.

Three important resolutions were passed by the Board of Governors of the American Construction Council, in a meeting held prior to the general convention. One of these authorized the expenditure of such funds as may be available up to $25,000 to be used in the promotion of the organization of local building construction congresses thruout the various construction centers of the country, where not already existing and to cooperate with such congresses as already exist.

In another resolution the Board of Governors requested the officers of the Council, operating especially thru its committee on Apprenticeship, Vocational Branches, and Craftmanship, to cooperate with employes and employers organizations, building congresses and all other elements in the construction industry and with the educational bodies, local and national, providing for apprenticeship which will be attractive to young men and will afford the fullest aim for the employment and training of efficient workers as apprentices, and will produce the skilled workmen needed in the construction industry; the Board further authorized as the first essential step in this program, the making of a national survey on apprenticeship needs and conditions of labor supplied thruout the construction industry.

In the third resolution passed by the Board of Governors it was decided that action on the part of the Council itself to procure important barometric figures and data for dissemination to the public and the Council's members would be deferred until such time as may be practicable. In presenting this resolution the Board said "The administrative machinery and the budget required to put into effect the program to accomplish these ends from the very nature of things would be very substantial in size." Since the funds of the Construction Council are very limited, this activity is one that cannot now be given special attention.

* * *

200,000,000 DUTCH BRICK COMING IN

One's memory is taken back to colonial times by the importation of brick from Europe for building uses in this country. Many a quaint dwelling or dignified hall, survivals of pre-revolutionary days, is notable for the fact that it was built of brick brought across from Holland or England. A single importer's contracts for 200,000,000 Dutch made brick representing about one-fifth of a year's output on the Hudson River, show the importations developed today to a point where they will have an important effect on building conditions in New York. Other similar contracts with German and Belgian brick plants are reported to have been obtained by other importers. Regular supplies of brick from abroad will not lower prices in New York to anywhere near the old levels, but they might help to reduce some of the exorbitant charges now made for towing and handling brick. Dutch brick means more homes for New York today, as once it meant more homes for New Amsterdam. There is little danger that Dutch brick will affect the production of the American product. Hudson River brick is easily commanding a higher price than the imported article.

Current Prices of Common Building Brick, Six Inch Drain Tile and Hollow Building Tile

IF CLAY PRODUCTS PRICES are any indication, the little slump in building thru which the country has just passed, did not have any very serious effect on production. Since publishing the last list of prices on June 12 only 11 cities have changed the price of common brick, seven cities have changed the price of hollow tile. The price changes were not in all cases downward. New Haven, Conn.; Albany, N. Y.; Fairmont, W. Va.; Portland, Ore.; Winnepeg, Man., all raised their prices from $1 to $5 per thousand brick. The price on common brick in Boston, Mass.; Elmira, N. Y.; St. Petersburg, Fla.; Houston, Tex.; Indianapolis, Ind., and Quebec dropped. The reductions in no case, however, were very large. This stability in price may be attributed to the fact that production thruout the country has remained fairly steady in anticipation of a big fall demand. When the first indications of a letup in building activities were evident manufacturers in most every section of the country had orders on hand for four to six weeks ahead, which were practically sufficient to carry them thru the period of depression. No appreciable drop in common brick prices is expected this fall and winter.

Drain tile prices were remarkably steady, only three cities showing a change. These were Pittsburgh, Indianapolis and Toledo, the change in each being an increase in price. Drain tile prices long ago hit the bottom and no further reductions are expected. It is quite possible that when production is again begun in a normal volume prices will rise.

Most of the price changes in hollow tile were revisions downward, excepting in the case of Fairmont, W. Va., and San Diego, Cal. In the first named city the price rose $5 per thousand and in the latter $1 per thousand.

	Common Brick Per M	Drain Tile (6″) Per Ft.	Hollow Tile (5x8x12) Per M
Portland, Me.	...	.15	
Boston, Mass.	25.00	.1862	
Providence, R. I.	30.00	.20	
Hartford, Conn.	21.00	.18	
New Haven, Conn.	30.00	.125	
New York City	24.00	...	
Albany, N. Y.	30.00	.165	200.00
Utica, N. Y.	26.00	.118	
Syracuse, N. Y.	20.00	.125	135.00
Oswego, N. Y.	30.00	.125	
Binghamton, N. Y.	24.00	.105	
Elmira, N. Y.	20.00	.10	
Rochester, N. Y.	18.75	.11	
Buffalo, N. Y.	26.00	.12	90.00
Jamestown, N. Y.	25.00	...	110.00
Allentown, Pa.	20.00	...	
Erie, Pa.	21.00	.095	100.00
Philadelphia, Pa.	17.00	...	
Reading, Pa.	...	.11	
Pittsburgh, Pa.	18.00	.17	102.00
Scranton, Pa.	25.00	.15	
Newark, N. J.	23.00	.1675	100.00
Paterson, N. J.	23.00	.155	
Trenton, N. J.	20.00	...	
Wilmington, Del.	22.00	...	
Washington, D. C.	19.00	.10	125.00
Baltimore, Md.	19.00	.18	
Norfolk, Va.	18.00	.12	150.00
Richmond, Va.	16.00	.15	
Huntington, W. Va.	16.00	.12	85.00
Fairmont, W. Va.	26.00	.095	100.00
Wheeling, W. Va.	23.00	.09	80.00
Atlanta, Ga.	*12.35	.14	
Miami, Fla.	27.50	...	140.00
Tampa, Fla.	...	...	
St. Petersburg, Fla.	18.50	...	125.00
Louisville, Ky.	20.00	.07	94.70
Lexington, Ky.	18.00	.12	
Memphis, Tenn.	17.00	.09	110.00
Nashville, Tenn.	15.00	.11	96.00
Birmingham, Ala.	20.00	.11	
New Orleans, La.	17.00	.12	
El Paso, Tex.	14.00	...	81.00
Houston, Tex.	10.40	.16	89.00
Dallas, Tex.	10.90	.19	80.00
Oklahoma City, Okla.	14.75	.08	75.00
Cincinnati, Ohio	...	.09	90.00
Cleveland, Ohio	16.00	.074	90.00
Columbus, Ohio	18.50	.10	
Toledo, Ohio	15.50	.10	90.00
Detroit, Mich.	18.00	.12	80.00
Evansville, Ind.	15.00	.05	72.00
Fort Wayne, Ind.	18.00	.07	80.00
Indianapolis, Ind.	16.00	.12	109.78
South Bend, Ind.	19.00	.08	100.00
Terre Haute, Ind.	18.00	...	
Bloomington, Ill.	20.00	.08	75.00
Chicago, Ill.	12.00	.10	95.18
Moline, Ill.	18.00	.14	82.00
Peoria, Ill.	15.50	.11	58.00
Green Bay, Wis.	18.00	.076	100.00
Milwaukee, Wis.	15.50	.09	75.00
St. Paul, Minn.	16.00	.09	75.50
Davenport, Iowa	...	...	65.00
Des Moines, Iowa	16.00	.12	75.00
Sioux City, Iowa	16.50	...	75.00
Kansas City, Mo.	...	...	
St. Louis, Mo.	14.00	.13	65.00
Lincoln, Neb.	16.50	.09	70.00
Denver, Colo.	14.00	...	85.50
Butte, Mont.	17.00	...	§ 15.00
Los Angeles, Calif.	*15.00	.0975@	§100.00
San Diego, Calif.	14.00	.14	121.00
San Francisco, Calif.	17.00	.065	108.00
Portland, Ore.	‡18.50	.10	95.00
Seattle, Wash.	15.50	.12	95.00
Cheyenne, Wyo.	18.50	...	
Winnipeg, Man.	19.00	.16	100.00
Toronto, Ont.	18.00	.11	
Halifax, N. S.	21.50	.30	
Quebec, P. Q.	†17.00	.11	90.00

Editor's Note.—The prices of the commodities listed above are reported as delivered on the job, and are, therefore, higher than the plant prices. These prices are obtained from a sister publication, Building Supply News, and are sent to this paper by dealers in the various cities listed. Brick and Clay Record will appreciate any corrections.

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*Little Rock, Los Angeles, Atlanta, Dallas, f. o. b. cars.
§Los Angeles, Heath tile; Butte, per ton at yard.
@ Drain tile, Los Angeles, f. o. b. factory.
†Quebec, common brick, f. o. b. sheds.
‡Portland, f. o. b. job, $19.00 to $20.00.

FINE CERAMIC MANUFACTURE

A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

PROPER MIXTURE OF CLAYS IS URGED

"THE ENGLISH POTTER can always make a better, finer plate than his American competitor for the simple reason that the American potter persists in the use of one grade of ball clay only, whereas the English potter uses two or more grades in proper mixture," says Arthur Rigby, formerly Dr. Mellor's chief assistant in the Testing Department of the Central School of Science and Technology, Stoke-on-Trent, England, in a report recently transmitted by him to Charles Brian, vice-president of the Paper Makers Importing Co., Easton, Pa.

Use More Than One Type of Ball Clay

"In my opinion it is not sound practice to use only one type of ball clay in a compounded body," states Mr. Rigby. "It is not advisable to give a definite ratio for the different types of clay; this must be determined by each manufacturer in accordance with the conditions prevailing in his plant, but there are certain principles to be observed in all cases and under all conditions.

"The requirements of a ball clay in a compounded body are determined by:

"(A) Type of ware.

"(B) Method of shaping the ware.

"1. Plasticity may be said to be the most important property of ball clay, and probably less is known of this than of any other physical property. As yet there is no satisfactory definition of, and consequently no method for measuring plasticity. In fact, hardly two people ever hold the same opinion on this subject, but, in spite of our meager knowledge, experience shows us that in the plastic body the ball clay has two outstanding duties to perform.

Clay Must Deflocculate Easily

"It must act as a bond for the non-plastic ingredients, and, therefore, the clay must have tenacity.

"In the second place, it must act as a lubricant to the non-plastic particles when pressure is applied in the shaping of the articles.

"When the ware is cast, the ball clay used must deflocculate easily on the addition of an electrolyte. The ball clay must be tough enough to maintain the shape of the article, and sufficiently strong, when dried, to permit the article being handled with safety.

"2. After burning, a ball clay should be sufficiently vitreous to give strength to the ware, although the importance of this point varies considerably with the type of body. The color of a fired sample should be examined carefully, as clays which are too dark can not be successfully bleached with cobalt stain, a gray color always being obtained. So much for the requirements of ball clay.

Properties of Ball Clays

"Let us now consider the properties of the two important classes of ball clay:

"1. Light-colored open clays.

"2. Black tough clays.

"The first class of clays is very clean and distinguished by their almost complete freedom from lignite or other coarse materials likely to be left on the lawns or sieves. They are easily blunged to a slip, and readily deflocculated. In the plastic state they can, with very little pressure, be spread out into a very thin layer, free from cracks at the edges. Their freedom from lignite makes black cores an almost unknown defect in the burned goods. The clays are usually very vitreous, and vary considerably in color—only the best qualities being suitable for whiteware.

"It is an established fact, however, that the best of this type of clay discolors the fire body less than some clays of a better color, but of more open texture, e.g., black clays.

"The disadvantages of this type of clay are weakness in the plastic state, i.e., a tendency to squat after being shaped, and a lack of strength in the dry state.

Black Ball Clays

"2. Black ball clays, so named because of the lignite present, which gives to the raw clay a dark color, are tough and not easily reduced to a slip. They vary considerably in their behavior toward electrolytes. Usually a certain amount of coarse residue shows on the sieves from a black ball clay. In the plastic state they are very tenacious, and can carry a large proportion of non-plastic material. Considerable pressure is required to work this clay, but, once the shape has been given, the toughness of the clay will maintain it, even with very large pieces. This forcing of the clay into shape, however, tends to set up strains, often resulting in cracked goods. Plates have been made from black and light colored clays and, while very few made of the former were free from cracks, those made of the latter did not show any signs of cracking. Black clays are very strong in the clay state, and their presence in the body mixture makes possible the handling of the goods with safety. The tensile strength of a black clay may be actually increased by adding to it a percentage of a lighter colored and weaker clay. The reason for this is that the mixture gives a greater variation in the size of the grain particles, which are thus able to interlock more easily than would particles of the same size. After firing, this type of clay usually has a good color, but is very weak and porous.

English Mix Clays

"Since each type of clay has properties which are highly desirable—the one possessing some not shown by the other—it is the best practice to use a mixture of ball clays, the ratio being determined by the type of goods and method of shaping. Moreover, this makes certain a more regular quality. In spite of all precautions, ball clays vary slightly from time to time. These variations will have less effect on the goods when at least two clays are used, since it is unlikely that both will change in the same way at the same time.

"In England the majority of manufacturers use two ball clays, some as many as three or four, but I can not recall one case where one clay or two of the same type are used."

* * *

BUILDING NEW PRESSING DEPARTMENT

The New Jersey Terra Cotta Co., Perth Amboy, N. J., is replacing temporary structures with ornamental brick buildings of the same construction and design as its other buildings. The new structures, having 100 feet frontage, will house the company's pressing departments, formerly located in the temporary buildings.

* * *

INDUSTRY LOSES E. M. RANSBOTTOM

Edwin M. Ransbottom, 55 years old, vice-president and general superintendent of the Ransbottom Brothers Pottery Co., is dead at his home in Zanesville, Ohio. He was born in Perry County, but had spent practically his entire life in Roseville, Ohio. He was a pioneer in modern pottery manufacture and has been a chief factor in the success of the mammoth pottery interests at Zanesville.

* * *

E. H. RASMUSSEN CHANGES POSITION

Announcement has just been made that E. H. Rasmussen has been elected secretary and general manager of the Mueller Machine Co., Trenton, N. J. Previous to his connection with this company Mr. Rasmussen held the position of secretary and treasurer of the Perth Amboy (N. J.) Tile Works.

* * *

GOODWIN LEAVES CLAYTON CHINA

The resignation of Herbert Goodwin as superintendent at the plant of the Clayton China Co., Alliance, Ohio, has been announced. Mr. Goodwin will become connected in an official capacity with the Atlas China Co. at Niles, Ohio.

* * *

EXPANDING KAOLIN MINE OPERATIONS

The Titanic Ore Co., of Hayesville, Clay County, N. C., has changed its name to the North Carolina Clay Co., and has increased its capital from $75,000 to $250,000. The company is mining kaolin, with a large output and has contracts in hand to run the plant for three years at the present output. Arrangements are now being made to house more men, and as soon as the necessary buildings are completed it is planned to put on three shifts and keep the machinery going 24 hours per day. The kaolin is being shipped to factories in Ohio and Indiana. The plant is equipped with machinery, so a large tonnage is possible with but few men. At the present time from 40 to 60 men are employed. The factory is located on the Hayesville-Murphy Road, about two miles out of Hayesville, N. C., which is the postoffice.

* * *

FORM KAOLIN COMPANY

The Gordon Kaolin Co. has been incorporated in Savannah, Ga., with a capital of $145,000, by F. H. Opper, F. P. McIntire and others, a report states.

* * *

CONSIDER OIL FOR CLAY DRYING

Producers of china clay in Cornwall and Devon, N. Y., are taking keen interest in experiments for the use of fuel oil in drying their product as it is said that a six months' test has demonstrated a considerable saving over coal and that fuel oil plants are adapted to existing kilns and furnaces. The use of fuel oil for this purpose, it is stated, has many advantages over coal, in addition to the fact that coal prices have recently risen considerably.

* * *

TO HAVE LARGEST SANITARY WARE PLANT

When the Standard Sanitary Mfg. Co. completes erection of its new buildings, in Tiffin, Ohio, it will be the largest sanitary pottery in the world, it is said. The present capacity will be doubled with an addition of 180,000 square feet of floor space. Starting next June, the company expects to have an output of 30 cars of completed products a day.

* * *

DISCOVER KAOLIN IN SAN ANTONIO

Large deposits of high grades of kaolin, said to be ideal for use in pottery making have been discovered near San Antonio by A. D. Walker, chemist in the bureau of economic geology at the University of Texas. There is talk in San Antonio of establishing a pottery factory there.

* * *

BOOK ON GEORGIA AND ALABAMA MINERAL DEPOSITS

A most remarkable publication containing a brief description of the commercial mineral deposits in the sections of Alabama and Georgia served by the Central of Georgia Railway Co., has recently been published by that company. T. Poole Maynard, a geologist, J. F. Mallory, Industrial Agent for the Central of Georgia Railway, and R. T. Stull, ceramic engineer and assistant industrial agent of the Central of Georgia, collaborated in producing this book. The work, it is stated by its authors, contains reference to every known outcrop along the railway and to the publications and special reports describing these outcrops of minerals. The territory covered has been divided by counties, alphabetically arranged, with reference in many cases to the nearest railroad station to the particular deposit. Every mineral deposit known in every county in the states of Georgia and Alabama along the lines of the Central of Georgia Railway is described.

The publication deserves the greatest praise as it will be of the greatest help to anyone interested in clay deposits in Georgia and Alabama. From the book one is enabled to obtain information on the following important factors and advantages in the development of the mineral deposits:

(1) Their proximity to the great coal fields and hydro-electric powers of Alabama and Georgia. These states have an estimated coal area of 14,000 square miles and water powers aggregating 2,603,000 undeveloped and 886,000 developed horse power.

(2) The convenience of the deposits to the port of Savannah, which enjoys coast-wise steamship service to Boston, New York, Philadelphia and Baltimore, as well as trans-Atlantic lines.

Accompanying the directory of clay and other mineral deposits is a geological map which shows the geological and physiographic provinces and the position of the various rocks and minerals. It also shows the lines of the railway, the transmission lines of the different power companies and the undeveloped water powers.

* * *

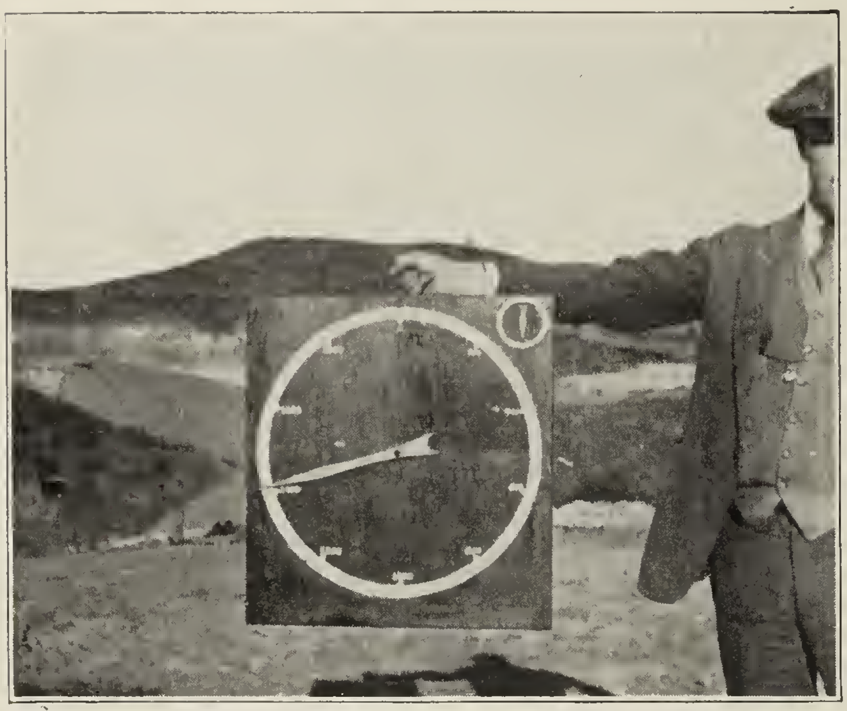
DUTCH SHIP 25,458 TONS OF BRICK TO U. S.

"It is interesting to note that shipments of brick from the Netherlands during May included 2,902 metric tons for the United States, making a total of 20,620 metric tons of brick shipped to the United States this year," says Commerce Reports August 6, 1923. "This is an entirely new trade. The brick are shipped to New York under a construction contract."

Management and Superintendence

SIMPLE, HANDY OIL GAGE

Here is a dandy little idea which a west coast manufacturer uses to indicate the amount of fuel oil on hand at the plant. It is simply a board about two feet square, on which is painted a dial indicating from 0 to 1,800 barrels of oil. Every morning the hand is set at the number of barrels on hand at the plant on that day. The small dial in the upper right hand corner indicates the number of cars on the track. The last notch on the dial, from 500 to 0, is indicated in red and this is termed the "danger zone." When the hand points to 500 or inside that area, the superintendent knows that his oil supply is almost exhausted and that he must quickly replenish it.



This Indicator Tells at All Times How Much Fuel Is on Hand.

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ELIMINATING SMALL STONES AND PEBBLES

Those concerns troubled with "niggerheads" and pebbles in their clay—and from Brick and Clay Record's observation there are a great many of them—will be interested in the method employed by a plant in New Jersey.

The clay used is a typical New Jersey plastic clay, but contains small pieces of pyrite which are hard to detect by the eye, since they are generally covered with clay. The pieces vary in size from very small nodules to that of an egg.

New Jersey clay requires no grinding such as shales. The general practice of a New Jersey clay plant is to dump the clay directly into a disintegrator, which cuts up the clay by its revolving knives, mixes it well, and also accomplishes some pugging. From the disintegrator, which is about 15 feet long, the clay is conveyed by belt conveyor to a set of Brewer smooth conical rolls. These rolls are set very close together (about one-fourth inch apart) and arranged so that there is a slight slope of about 15 degrees in the common tangent of the two rolls.

The rolls throw out the pieces of pyrite, and do it very satisfactorily. Even very small pieces are thrown out. However, there is a very great wear on the rolls, and these must be renewed quite frequently.

Corrugated rolls, it is claimed by the superintendent of this plant, would nip the pieces of pyrite and crush them, and accordingly would not be practical. The smooth rolls do not nip the stones. From the rolls the clay is conveyed to a storage bin by belt conveyor.

*2. Dies for Auger Machines**

Object: To shape, size, smooth and compress the irregular mass of clay delivered from the auger into a uniform column. Because of (1) an irregular delivery of clay from the auger, such as variations in pressure from side to side intertwined spirals from the auger (or an irregular rate of delivery), or (2) because of the friction of the sides of the die, an uneven flow is apt to be produced, causing a laminated or cracked structure. Fresh surface of clay in the soft, plastic (soft mud) condition will knit together with slight pressures. As the water content is decreased to that of the stiff mud condition common for auger machines the pressure to cause knitting must be increased. The auger blades produce slicked or smoothed surfaces and greater pressure is needed to knit these than to knit freshly torn surfaces. The retarding effect or friction of the sides and corners of the dies may be reduced by lubricating the sides (lubricated dies) or by increasing the pressure at the corners (dry dies). The differential flow and consequent strains and rupture are caused by an unbalanced system of the following factors:

1. External adhesion (clay to metal).
2. Internal friction (clay to clay).
3. Internal cohesion (clay to clay).
4. External friction (clay on metal).

The factors for the three general groups of clays ar classified as follows:

	Sandy Clays	Good Plasticity	Sticky Plastic
1.	Low	Medium to low	High
2.	High	Medium to high	Low
3.	Low	Medium to high	High or medium
4.	*High	Medium to low	High

*This varies with the relative hardness of the metal surface to that of the sand grains.

When Increased Pressure Is Necessary

H. Spurrier (Jour. Amer. Cer. Soc., Vol. 3, p. 388-403. 1920) has shown that the layers of clay which slide along the side of the die and center cores have a greater density and a lower air content than the central portion of the column. One determination gave 2.67 per cent. volume of included air in the outer one-half inch layer and 11.9 per cent. air volume in the layer of clay just beneath. In other words, the increased pressure necessary to force the clay over the metal surface forced the air towards the center. Did it force any of the water to the center and leave a dryer surface?

Lamination and Variation in Water Content (Tempering)

The effect of changing the water content will be different with different clays. Increasing the water content increases the ease of flow and the sticking properties so that if lamination planes are formed they will knit together more easily. On the other hand, the increase of water content may also increase the adhesion or stickiness of the clay to metal and

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Editor's Note.—This is the second part of a paper prepared by the Pacific Northwest Clayworkers' Association. In compiling it much information was obtained from the references quoted in Brick and Clay Record of September 4, 1923.

decrease the internal friction of clay to clay so that differential flow (fast center flow) is worse.

Die Taper

According to the shape we may have (1) flat or straight, and (2) tapered dies. Flat or straight dies have parallel sides and in hollow ware the sides of the cores are parallel with the sides of the die. Tapered dies are smaller at the mouth than at the back.

Tapered Dies for Hollow Ware

According to Greaves-Walker, (1) each clay will develop its greatest column speed when run thru a die with a certain taper. In general the greater the taper the more compression, the slower the speed and the more power required. To find the proper taper for a new clay, make the die of wood with no taper. Note the wear in conjunction with the column speed, which will increase to a maximum and then decrease as the angle taper increases. No taper at all is better than too much. The increase in column speed from the no-taper point to the maximum speed is often little or nothing, but beyond the maximum speed taper the column invariably slows down. The slowing down is caused by the wedging effect in the cone shaped space. The clay and water mixture is only slightly compressible. Some manufacturers build dies with less taper than is required to produce the maximum speed and allow the die to wear to the proper angle.

Die Wear

To determine the time to replace a die, figure the cost of ware lost per day due to slowed production, plus the increased cost of freight due to extra weight of tile versus the cost of a new die.

Tapered Dies for Brick

Taper in the die increases the pressure on the clay and thus tends to knit together the intertwined spirals of clay from the auger. Excessive taper causes more differential flow of clay, but performs more knitting of the auger spirals. Too little taper permits a loose, uncompacted structure, but causes little differential flow. Thus an intermediate condition or compromise is best. The greater the taper the greater the pressure of clay against the sides of the die and the greater the resulting friction. The pressure on the sides varies with the speed of the column. With slow speeds there is less difference between a high taper and a low taper; with fast speeds the difference is increased. From the taper-pressure relationship the die should have the greatest taper where the most retardation is desired. Dry dies (non-lubricated) are apparently built according to an opposite idea. Because the friction opposing motion is greater in the corners it is common practice to cut out or increase the taper in the back end of the corners. Stull says that the clay packs in these spaces and offers a clay surface for the movement of the column in place of the metal surface. Does clay slide more easily on clay than on metal? The above states the condition where the pressure comes from near the center of the barrel and the die opening is relatively large.

If the pressure comes from near the outside of a large barrel and the clay column has to bend around a sharp corner to get out of the die, the gouging out of a corner (increase of taper) gives a straight line movement thru that corner which will increase the flow at that point. Whenever the die entrance is smaller than the end of the barrel a tapered barrel of clay is formed from the circumference of the auger wings to the edges of the die and clay slides, by laminated section moving on laminated section.

Size of Brick versus Taper

Plastic clay has a slight elasticity. Clay under high pressure in the die will expand at the outlet. The front or outlet of a die having a high taper (high pressure) must be slightly smaller than that of a die of low taper (low pressure). Any taper greater than that for maximum discharge is wasteful of power, production and produces a poor structure because the expansion is accompanied by a weakening of structure.

Lubricated Dies

The short hollow ware tile and sewer pipe dies are only rarely lubricated. It is common practice to lubricate the longer brick dies. The theory of lubrication is similar to that of the oil lubrication of the moving metal surfaces in contact with each other in machinery. In the case of clay wares we are not limited to oils, but can use water and steam. It is necessary to provide a constant film of lubricant so that the clay does not come in contact with the metal.

Method of Application of Lubricant

To distribute a sufficient quantity of lubricant around the entire column, to give the corners a greater quantity than the middle portions of the sides and to provide the die with a renewable lining, has taken considerable study and experimental work. Steam, which is usually available at high pressures at the brick plant, is one of the most common lubricants. R. T. Stull (Trans. Amer. Cer. Soc. Vol. 11, p. 450) found that water under pressure was more suitable for the plastic fire clay he was using. A large part of steam on coming in contact with the cold clay condenses and water is thus the real lubricant. Likewise, if the die is a little rough or if the clay surface is slightly blunged with the water, a slimy clay-water slip may be the lubricant.

Alkalies cause a release of water in the clay and have been added to the water for lubrication.

Steam Lubrication

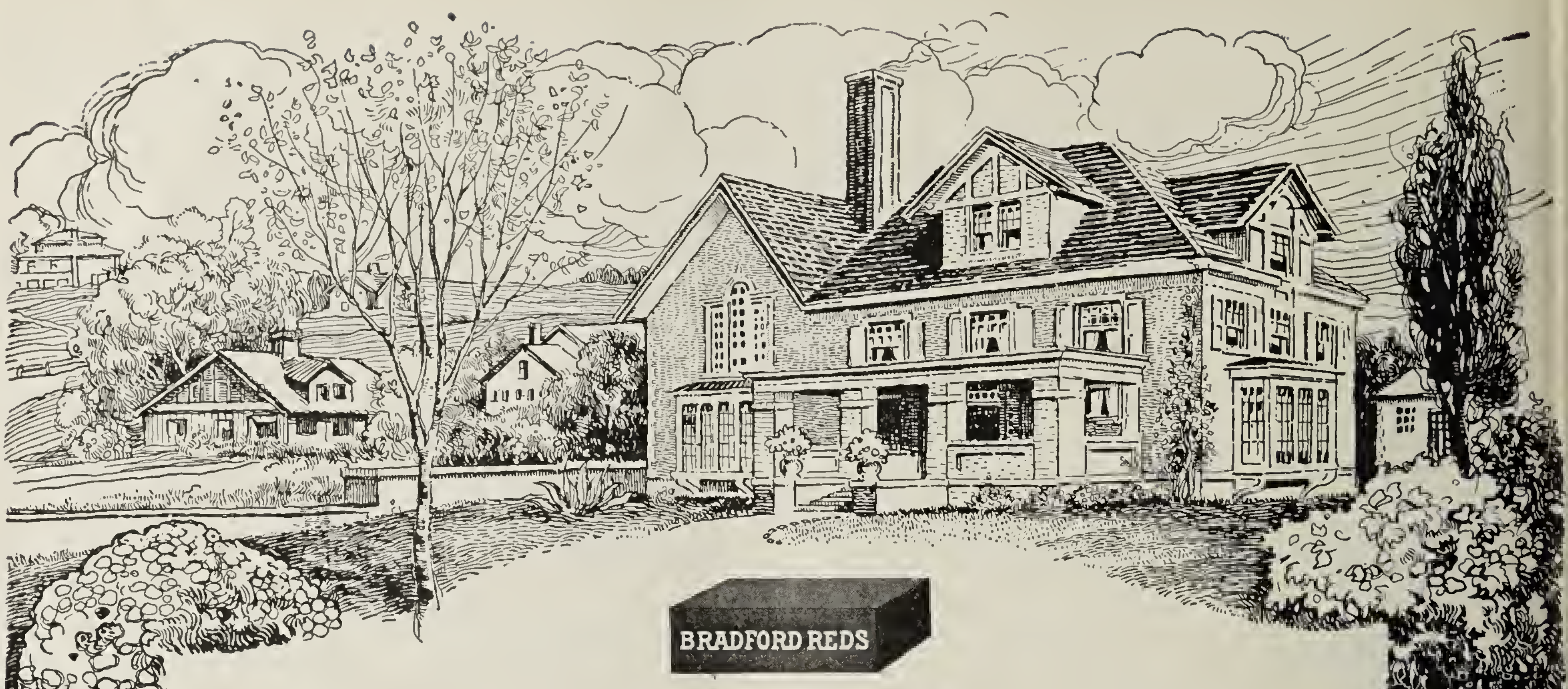
Steam for die lubrication has been produced by heating the die with flame to such a temperature that the water in the outer skin of clay forms a film of steam. Electrical methods have also been used to cause the clay to release water as it comes in contact with the charged die. The pressure of steam or water required will vary with the pressure of the clay on the sides of the die, which in turn varies with the taper. The clay must not be forced into the lubrication openings. Stull found that, with a good taper, water under 25 pounds per square inch pressure was sufficient.

Construction of Lubricated Dies

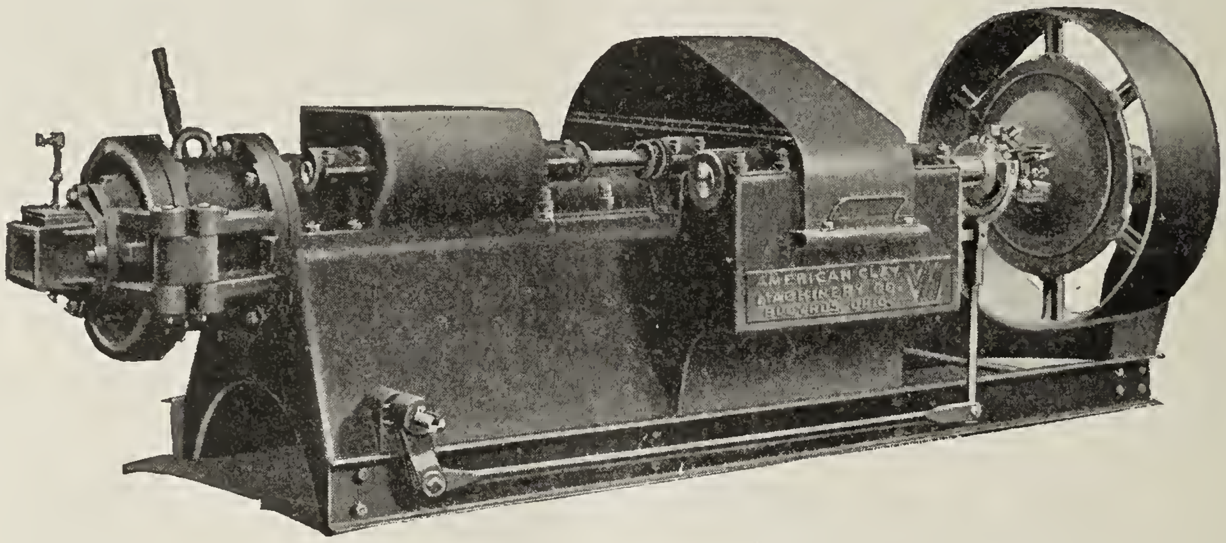
Niedergesaess Die. Four rectangular cast iron liners, having channels around their edges fit into the die casing, and thus form a reservoir for the lubricant entirely around the column. Rectangular sheet steel liners fit into the cast iron liners and form the inside surface of this reservoir. The sheet steel liners overlap each other and the lubricant emerges from these joints. Tongue shaped aprons are placed over the sheet steel liners with the tip of the tongue near the mouth of the die. These prevent the wearing of the liners and exclude the lubricant from the central section of the sides, or, in other words, send the lubricant to the corners. This die can be used with steam, water or oil and the aprons and liners readily replaced.

Maintaining Proper Lubrication

To maintain proper lubrication it is necessary to have a constant flow of the lubricant at a slightly greater pressure than the pressure of the clay against the sides of the die. A die of low taper, therefore, does not require as high a pressure on the lubricant as a die of higher taper. To relieve the retarded flow of the clay column in a die lubricated from the same source, the corners should have a lower taper or no taper, while the sides should have the higher taper. The Niedergesaess die avoids this by the use of aprons which do not allow the lubricant to come in contact with the column except at the corners.



THE BRADFORD BRICK CO.



American No. 290 Augur Machine

The Bradford Brick & Tile Co. is one of the best and most carefully operated plants in the world. They make the famous Bradford Brick.

When the plant was remodeled they bought Four American No. 290 Augur brick machines.

Three of these machines were put into operation and the fourth was kept ready for an emergency if anything went wrong.

In several years of continuous operation at capacity *"nothing has gone wrong"* with any of the 290 machines and Mr. Hanley, of the Bradford Co., says he thinks he *"might as well sell that extra emergency machine."*

The Three No. 290 machines are handling all the clay delivered to them without trouble or delay.

The Bradford plant is also using three of the American 384 Grinders and three of the American No. 302 Pug Mills.

THE HADFIELD-PENFIELD STEEL CO.

BUCYRUS, OHIO

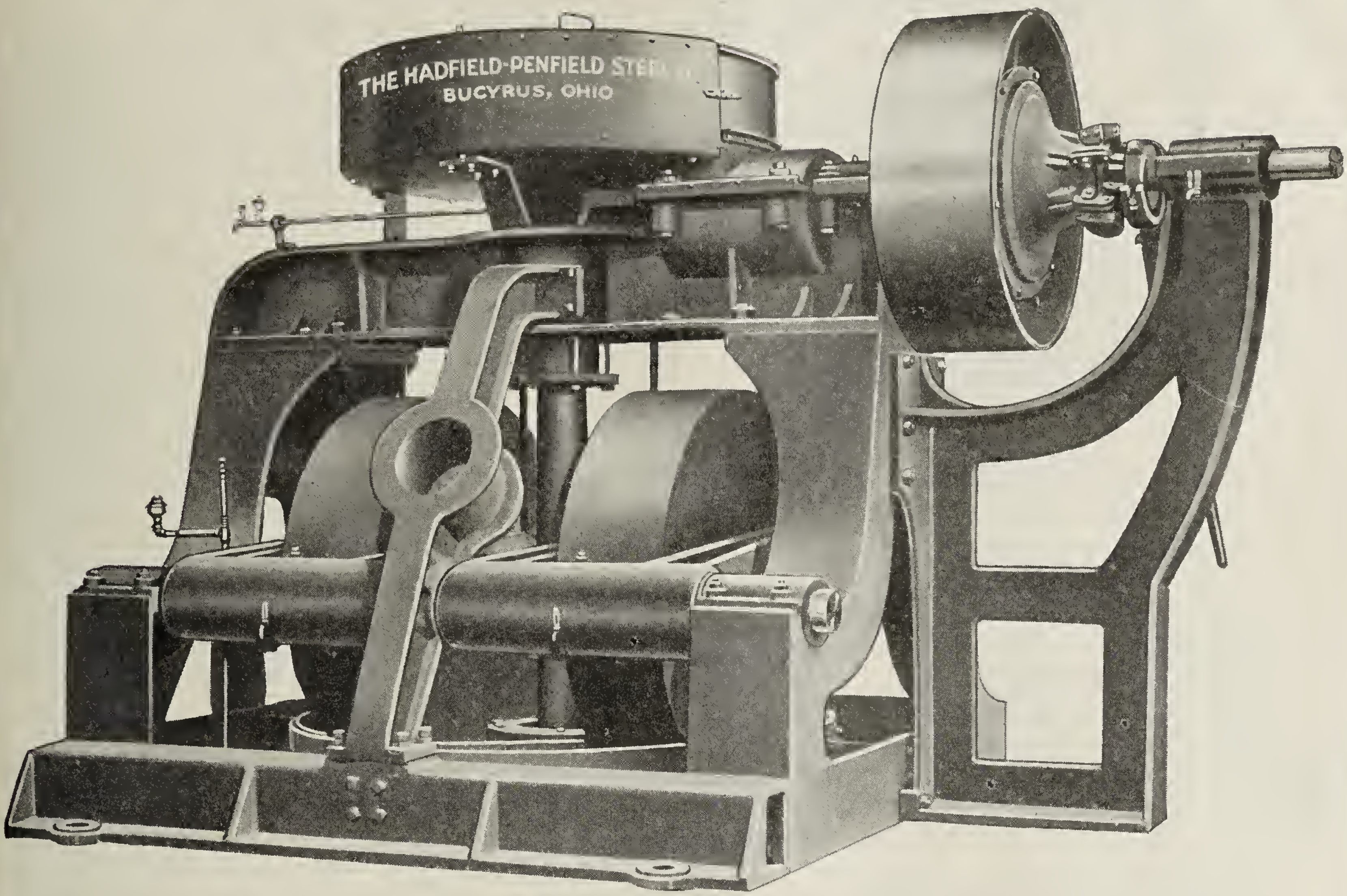
Formerly The American Clay Mchy. Co.

Bradford, Pa., June 22.

The above ad is in accordance with the facts. Would be glad to have you use our name in this connection.

THE BRADFORD BRICK CO.

And The GRINDER Too



American No. 384 Grinder in Bradford Plant

The Bradford Brick and Tile Co., Bradford, Pa., is also using three No. 384 American Grinders. Among other things here is a paragraph indicating their opinion of the No. 384. Here it is:

> "With three of these machines running nine hours a day we are putting through a total of 450 tons, ground to about 14 mesh fineness. As you know our material has certain characteristics which cut down the capacity of any grinding or screening machines to an amount somewhat lower than that frequently obtained in other districts.
>
> "The screening capacity somewhat restricts the operation of the pans at the present time."

Other Progressive Producers of Clay Products are taking advantage of the great production and greater saving features of The American No. 384 Grinder. Get complete information from Bulletin No. 384. Sent on request.

The Hadfield-Penfield Steel Co.

BUCYRUS, OHIO

Builders of "The American Line"

Dryer, Transfer and Clay Cars,
with Flexible Bearings.
Switches, Turntables and Track.

THE CHASE FOUNDRY & MFG. CO.
COLUMBUS, OHIO

CHASE

CAUCASIAN
OXIDE MANGANESE
Powdered—Granular
For Speckled Effects

PRECIPITATE
CARBONATE BARIUM
For Prevention of Scum
Thereby Producing
Deeper and Richer
Color

THE
ROESSLER & HASSLACHER
CHEMICAL CO.
New York

Chicago
Boston
Philadelphia
Trenton
New Orleans
Pittsburgh
Kansas City
Cleveland
San Francisco

The Letter Box

A Place Wherein Letters That Have General Interest Are Published and Commented Upon

ARE "COMMISSIONS" TO ENGINEERS ETHICAL?

Brick and Clay Record has received the following letter which brings up a much mooted question. This journal would appreciate it very much if readers would state their point of view. Any replies received will be published in the next issue with or without the correspondent's name as desired.

Gentlemen:

Do you consider it ethical practice for a consulting and contracting engineer to request commissions from manufacturers who furnish material or machinery called for on contracts which he has with his clients?

It has been our rigid practice to refuse to grant commissions in cases of this nature. We were recently informed, however, by a designing and consulting ceramic engineer that he received commissions from practically all manufacturers who furnished materials to his clients in connection with equipment designed by him, and that it would be necessary for us also to give him a commission in order to get him to specify our products to his clients.

This is the first experience we have had of this nature with any engineer dealing with the ceramic industry, and we will be very much interested in knowing whether this is generally considered as ethical practice by members of the industry.

Yours very truly,
A Material Manufacturer.

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SOUTH CONFERS ON FREIGHT PROBLEMS

An important meeting of the Southeast Shippers Regional Advisory Board was held in Atlanta in mid September, attended by a number of the larger shippers of the South, traffic experts and railroad officials, the purpose of the conference being to discuss technical and other problems relating to freight shipments, with a view to improving the situation in the southern field. At present, with the possible exception of lumber and lumber products, brick and the various other burned clay products used by the building industries and in road construction and street paving, comprise one of the largest single commodities transported by the railroads in the South, and the industry, therefore, had a number of representatives at the meeting. The conference is expected to improve materially the freight situation in the South, and do away with the possibility of car shortage in the very near future.

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ASSOCIATIONS DISPLACING LOBBYIST

Commenting recently on the passing of the lobbyist from Washington, a writer in the New York Times declares "he now has a negligible effect on major legislation."

The New York Times article continues:

"Congress has become too big and too various for him. As a molder of legislation he has been completely outdone and displaced by the great national associations which represent not individuals and corporations, but economic groups of national extent. And these associations represent their groups, not secretively but openly and even noisily, to the accompaniment of all the publicity they can possibly get. They do not bother much with tea parties and golf games for the same reason that a man who has a shotgun, and a right to use it, will not employ a pea-shooter.

"These national associations are the real extra-congressional government of the United States. They are legitimate institutions acting for the most part entirely within their rights."

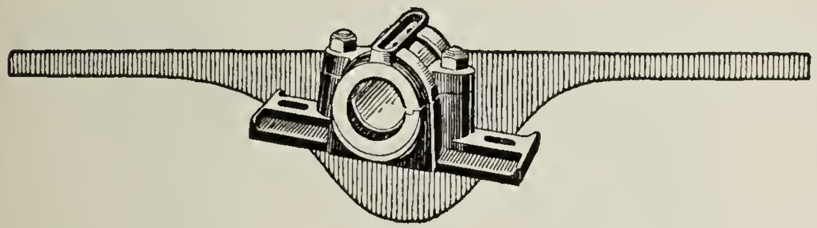
GEARS

SMOOTH running; correct in design, accurate and true to pitch, Caldwell gears are bound to please you. We make all types—machine-molded, cut tooth, mortise gears, worm gears, etc. Caldwell Promptness is Traditional. It is at your service. Our stocks assure prompt shipment.

Let us figure with you next time you are in the market.

H. W. CALDWELL & SON CO. LINK-BELT COMPANY, OWNER
Dallas, Texas, 709 Main Street—Chicago, 17th Street and Western Ave.
New York, Woolworth Bldg.

CALDWELL



"Sturtevant Drying Systems
Are Economical, Efficient, and Sure"

We maintain a special organization of competent engineers experienced in drying work, as well as a Research Laboratory for conducting investigations to determine correct and economical temperatures, humidities, and velocities of air for the successful drying of your product. No drying process is too small or too large, too simple or too complex for a Sturtevant Drying System.

Our recommendations for your particular problem would not obligate you in any way.

B. F. STURTEVANT CO.
Hyde Park, Boston, Mass.
Offices in all principal cities.

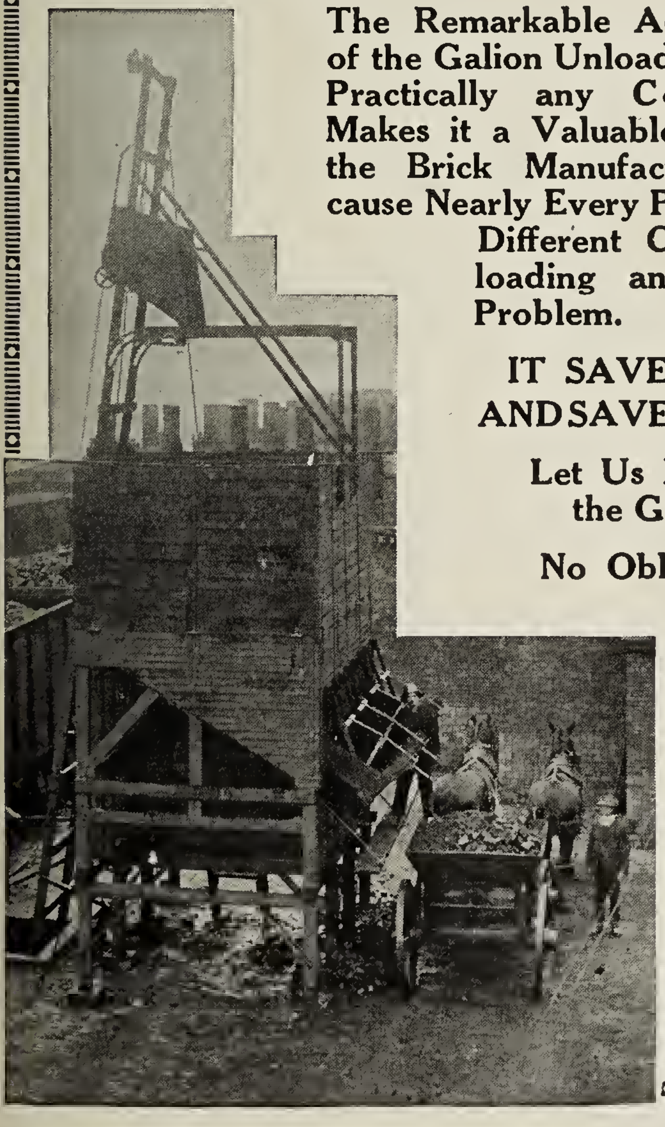
Adaptability

The Remarkable Adaptability of the Galion Unloader to meet Practically any Conditions Makes it a Valuable Asset to the Brick Manufacturer, Because Nearly Every Plant Has a Different Coal Unloading and Storing Problem.

IT SAVES TIME AND SAVES MONEY

Let Us Explain the Galion

No Obligation



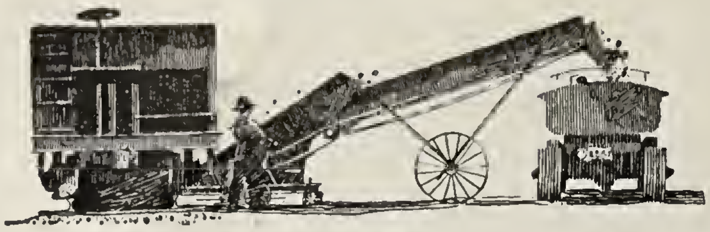
The GALION
Iron Works & Mfg. Co.
Galion, Ohio

Announcement

The American Dressler Tunnel Kilns, Inc., will have a message for the clay products industry in the near future which will be of considerable interest.

The message will appear in this paper at the earliest possible moment. In the meantime we are, as usual, ready to serve you.

American Dressler Tunnel Kilns, Inc.
1740 East 12th St. CLEVELAND



Unload That Car With Machinery!

The days of hand-shoveling are past. Industry today requires speed—action! Thirty tons or more per hour is no unusual capacity when a

ROBBINS
Portable Car Unloader

is at work unloading your coal. This compact machine can be operated either above or below the rails. It will load directly into a motor truck, filling the largest conveyance in a few minutes. Can be used in conjunction with a portable conveyor for serving greater distances.

Get The Facts

They are yours for the asking. Remember that a Robbins Portable Car Unloader does not cost a lot of money to buy, but it saves a lot of money over just a short period of use.

WRITE TODAY

Robbins Machinery & Supply Co.
444 W. Grand Ave. Chicago, U. S. A.
"Machinery for Moving Merchandise"

Use
SMOKELESS
Oil Burners
FOR

1. Economy in the amount of both *oil* and *steam.*
2. Improved quality of products burned.
3. Minimum labor because of their simple and perfect control.
4. And further because in buying a Smokeless System you are buying the Acme of High Standard Equipment that can be seen in successful operation all over the country.

THE SMOKELESS OIL BURNER CO.
BUCYRUS, OHIO
Complete Oil Burning Systems

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

PARMELEE NOW CERAMIC DEPT. HEAD

Professor C. W. Parmelee has been made head of the Department of Ceramic Engineering at the University of Illinois. He has been connected with the institution since 1916 as Professor of Ceramic Engineering and during the past year served as acting head. Mr. Parmelee is very well known in the ceramic industry thru his work and activity with the American Ceramic Society and Illinois Clay Manufacturers Association.

CULLEN W. PARMELEE

HASSE LEAVES BELDEN BRICK CO.

E. A. Hasse, of Gnadenhutten, Ohio, has resigned as secretary of the Belden Brick Co., Port Washington, Ohio, effective November 1. He has been associated with the company in this capacity for the past five years. Mr. Hasse plans to devote all his time to the Labor-Les Products Co., Cleveland, of which he is the owner. He will be succeeded by Raymond Bennett, of Canton, an accountant in his department.

ADAMS UNDERGOES OPERATION

J. M. Adams, president and treasurer of the Ironclay Brick Co., of Columbus, Ohio, went to a Columbus hospital the latter part of September for a minor operation. He came thru the ordeal all right and is on a fair road to recovery. Mr. Adams was compelled to call off a meeting of the American Face Brick Association which was scheduled for Chicago, September 27 and 28, owing to the operation. He is arranging to attend the annual meeting of the association.

DEATH TAKES ANTON C. STUEVER

News was received from St. Louis, on September 25, of the death in a sanitarium at Battle Creek, Mich., of Anton C. Stuever, 57 years of age, president of the Highland Fire

If Marked BREWER It Is Good

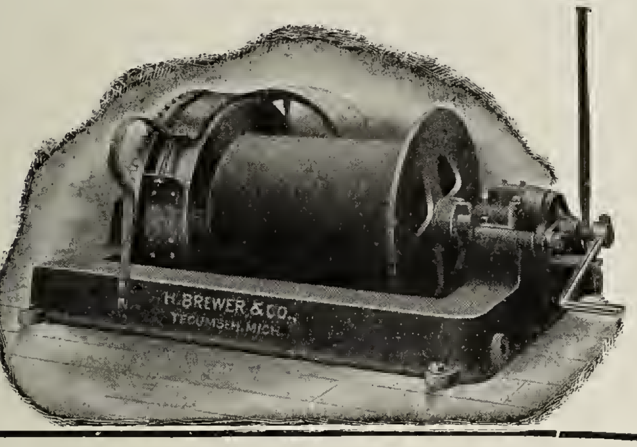
Clay Working Machinery

Block, Brick and Tile Machines
Pug Mills
Crushers
Granulators
Feeders
Disintegrators
Dry Pans
Cutters
Hoists, etc.

Free Engineering and Clay Tests

Brewer engineering service is available without charge or obligation. Competent men will give you best advice, look over your plant and make suggestions for any needed improvements. Take advantage of this free service. Send for Brewer catalog.

H. Brewer & Company Box 25 Tecumseh, Mich.



Records Speak Volumes

The unusual qualities of Caldwell Cypress Tanks are proven by their enviable records in all sections of the country. Perhaps this is largely due to the fact that, of all woods, cypress is the one which lasts best outside its native climate.

Thirty years experience in building tanks enables us to couple this remarkable tank wood with workmanship and design that ensure the maximum of tank satisfaction.

Send for Catalog

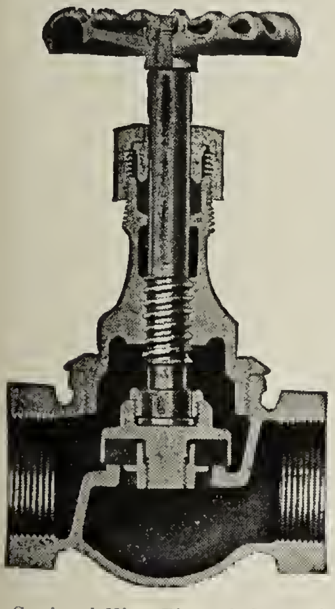
W. E. Caldwell Co.
Incorporated
2380 Brook St., Louisville, Ky.

Caldwell TANKS AND TOWERS

Made for maximum service not merely the average

TRADE JENKINS MARK

Jenkins Bros Enduring Valves



Sectional View Fig. 106, Screwed, Standard Bronze Globe Valve.

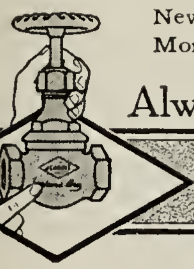
The practical, sound construction of Jenkins Valves is the result of 59 years of study and experience in making valves—correct designs, the best materials, and expert care and workmanship are united to produce valves of assured performance.

"Jenkins throughout" your plant means the greatest valve efficiency and economy.

Valves in bronze, iron, and steel for all requirements. At supply houses everywhere.

JENKINS BROS.

New York Boston Philadelphia Chicago
Montreal London



Always marked with the "Diamond"

Jenkins Valves

SINCE 1864

2854-J

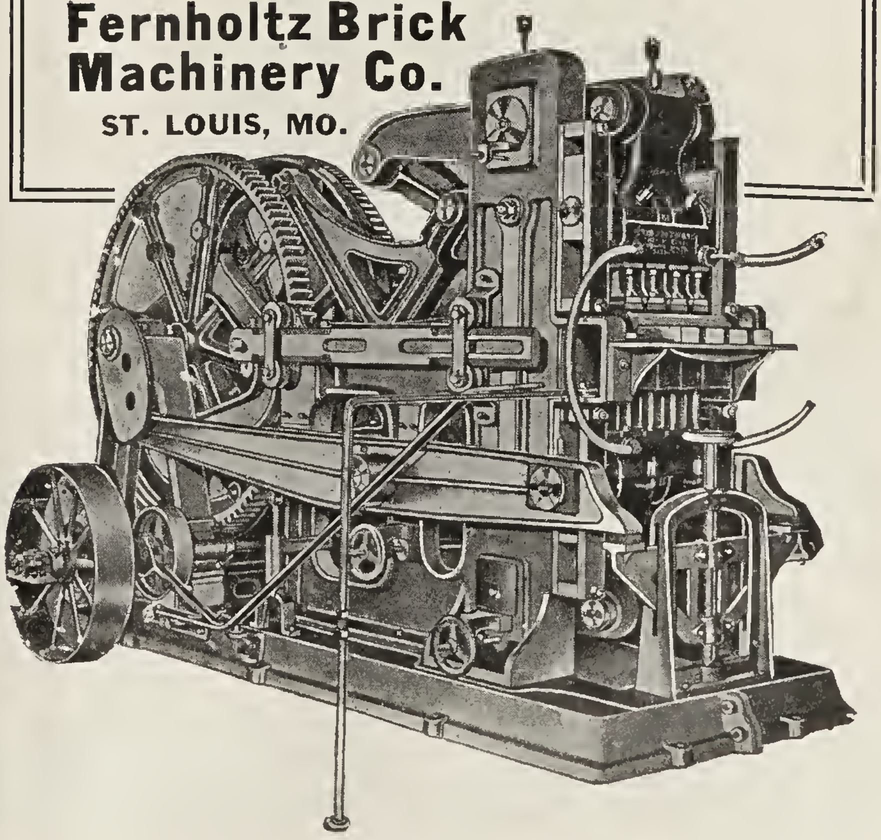
Fernholtz Presses

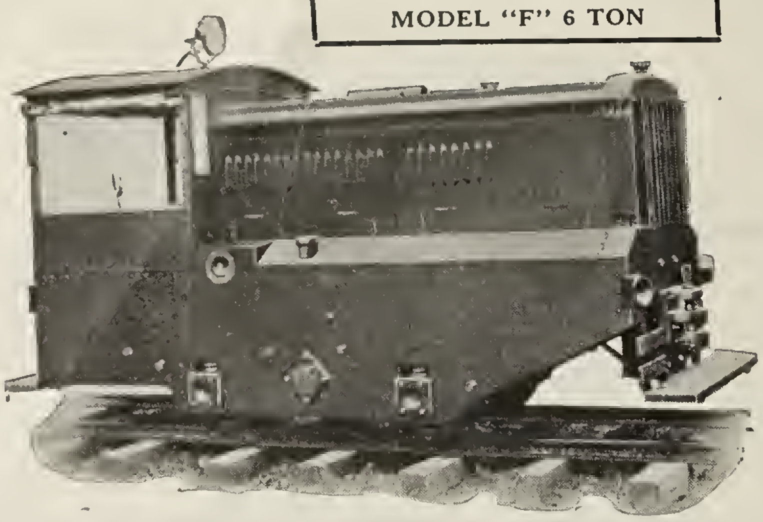
Pulverizers
Mixers
Trucks
Barrows
Screens
Mold Boxes
Liners

are built to stand long and continuous service. Nothing but the best materials go into these machines. Every operation in the manufacture of Fernholtz equipment is in charge of men skilled at this work.

Put your problems up to us

Fernholtz Brick Machinery Co.
ST. LOUIS, MO.





MODEL "F" 6 TON

The Proof of Durability Lies in Service

The service which users get from the MINSTER Locomotive bears out our contention of "Longest Life, Uninterrupted Service."

Made in 2 to 8 ton capacities.

Write for catalog.

The Industrial Equipment Company
510-512 Ohio St. MINSTER, OHIO
Eastern and Export Department:
The Herbert Crapster Co., Inc., 1 Madison Ave., New York City

MINSTER
INDUSTRIAL LOCOMOTIVES

"Yes, We Have No Bananas"

Our dies are becoming as popular with the Clay Workers as this song is with the Public.

We make a specialty of stiff mud dies.

Our dies are built to stand the gaff.

Snyder's Oil Dies are something different but right in principle.

CUTTING TABLES,
CONVEYORS,
AND ELEVATORS

Write for information today!

The Lincoln Machine Co.
MINERVA, OHIO

Clay Co., St. Louis. Mr. Stuever was also president of the Forest Park Amusement Co., St. Louis, and an official of the Independent Brewery, of that city. He was owner of Fontaine Ferry Park, at Louisville, Ky. Mr. Stuever had been a patient at Battle Creek for four years, and died of heart trouble, it is said.

W. A. OWEN DIES

W. A. Owen, of Atlanta, for a number of years prominently identified with the brick manufacturing industries of the Southeast, died at his home in Atlanta recently after a brief period of illness. In recent years Mr. Owen has been connected with the sales staff of the B. Mifflin Hood Brick Co., of Atlanta, and prior to that time he served for a number of years as general manager of the Legg Brick Co., also of Atlanta. He was very well known to the trade thruout the district due to his many years of close association with that industry.

OGDEN LEAVES BUREAU OF MINES

E. P. Ogden, formerly connected with the Bureau of Mines and familiar to the clay industry for his work in research, while connected with the now famous laboratory car Holmes, has left the Bureau, it is reported, and will be employed by the Lavino Refractories Co., 139 S. Fourth St., Philadelphia, Pa. During the course of the research work done by the Bureau of Mines in cooperation with the Refractories Manufacturers Association at the Lavino plant, Mr. Ogden was enabled to save a considerable amount in burning time and fuel costs for the Lavino Company.

PIERSON WANTS SENATOR'S JOB

Arthur N. Pierson, sewer pipe and clay products manufacturer with offices in the Woolworth Building, New York, has just finished one of the most strenuous campaigns—that for the Republican nomination of State Senator in Union County, his home bailiwick in the neighboring state of New Jersey. Mr. Pierson served in the New Jersey Assembly from 1915 until 1922. He was floor leader of the House in 1918 and Speaker in 1919, and is now serving his first term in the upper house to which he seeks re-election. He introduced the commercial arbitration law in the New Jersey legislature where he has also been a steadfast champion of better highways.

UNDERWRITERS' LABORATORIES HEAD DIES

William Henry Merrill, founder and president of Underwriters' Laboratories, Inc., died Monday, September 17, at the Presbyterian Hospital of Chicago. Born in Warsaw, New York, December 29, 1868, Mr. Merrill graduated from the Massachusetts Institute of Technology in 1889 and shortly thereafter reported in Chicago for service in fire protection and prevention, to which cause his very active career of a third of a century was exclusively devoted. In 1898, he organized the work now known the world over as Underwriters' Laboratories and has since served as its principal executive. The institution both as to its plant and its equipment and its influence in the building and manufacturing industries becomes an enduring monument to his talent as an organizer and executive and as a crusader in a public work of major importance.

BIRMINGHAM MANUFACTURERS BUSY

Practically all of the clay manufacturing plants of the Birmingham, Ala. district are being operated on full time and with plenty of orders to keep them going thruout the season.

BUILD MODEL BRICK HOME IN FRESNO

At the Fresno (Cal.) County Fair which was held during the week of September 24, there was exhibited a model home

Gates Stokers Save Money

Out of every dollar spent for coal used in the old fashioned hand-firing of kilns, from 20 cents to 50 cents is needlessly wasted.

The Gates Automatic Kiln Stoker

Produces higher percentage of perfect wear;

Gives accurate control and distribution of heat;

Increases output and efficiency;

Uses soft coal screenings instead of high grade coal.

The above are honest statements of facts which we are willing to prove to your satisfaction.

CLAY SERVICE CORPORATION
128 N. Wells St., Chicago

Increase the value of your product by improving the color with

LAVINO BRAZILIAN MANGANESE

"Best for Face Brick"

Economical
Adaptable to any Clay
Intense Staining Powers
Various Effects Obtainable
Uniform Analytically and Physically

Liberal samples and full information gladly furnished upon request.

E. J. LAVINO and COMPANY
Bullitt Building Philadelphia, Pa.
Grinding Plant: Plymouth Meeting, Pa.

SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK REGISTERED U.S. PATENT OFFICE
A CELITE PRODUCT

Kiln Insulation

HEAT lost through walls and settings of uninsulated kilns increases production costs

1—by causing an excessive consumption of fuel;
2—by making it difficult to get high temperatures and hold them evenly;
3—by causing imperfectly burned ware, due to uneven temperatures.

SIL-O-CEL Insulation reduces production costs

1—by preventing heat waste, thus lowering your consumption of fuel;
2—by holding a uniform temperature within the kiln and so reducing the number of rejects;
3—by protecting the outer walls of the kilns from temperature strains, prolonging their life and saving repair bills.

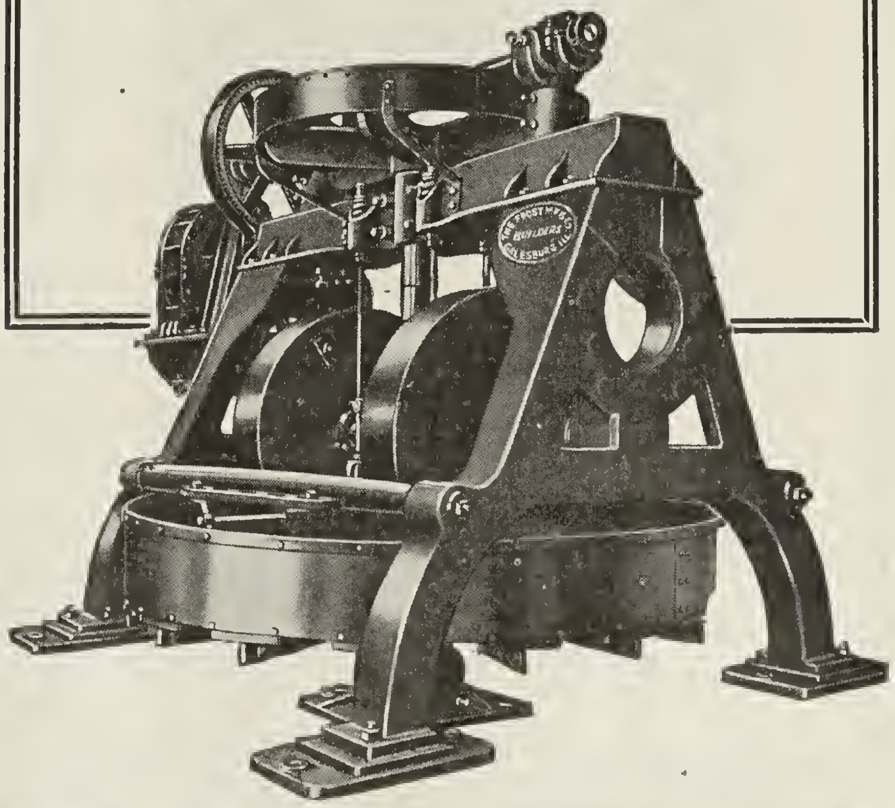
Complete information on Sil-O-Cel Kiln Insulation gladly sent upon request. Write nearest office for Bulletin B-5A.

CELITE PRODUCTS COMPANY
New York 11 Broadway Chicago-53 W. Jackson Blvd. San Francisco-Monadnock Bldg.
Offices and Warehouses in Principal Cities
CELITE PRODUCTS LIMITED, New Birks Bldg., Montreal, Canada

BETTER QUALITY WARE

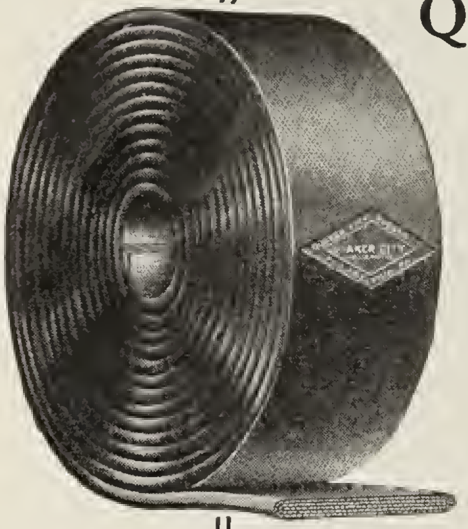
That is the result when Frost Dry Pans are put on the job.

THE FROST MFG. CO.
GALESBURG, ILLINOIS



QUALITY ECONOMY SERVICE

RUBBER BELTING



Quaker City—

A friction surface rubber belt made purposely to stand hard work, and is doing it.

On hard transmission duty including main drives in brick and clay manufacturing is where QUAKER CITY will help you.

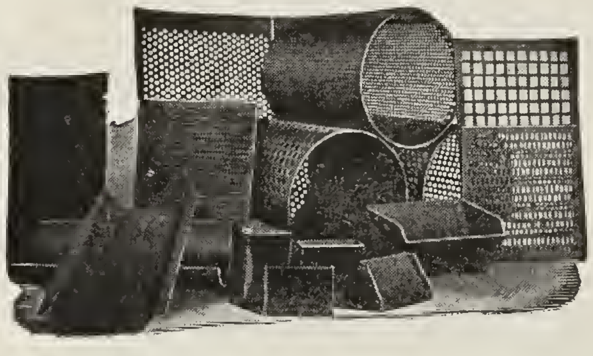
Let us estimate on your belting requirements—transmission or conveying.

Quaker City Rubber Co.

Mfrs. Mechanical Rubber Goods; Auto Tires and Tubes

Philadelphia Chicago Pittsburgh New York

HENDRICK SCREENS
FOR ALL PURPOSES



ELEVATOR BUCKETS
CONVEYOR TROUGH and FLIGHTS
STACKS, TANKS,
GENERAL SHEET and
LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL
PLATE CONSTRUCTION

Ask for your copy of the Perforated Metal Handbook

HENDRICK MFG. COMPANY
CARBONDALE, PA.
NEW YORK OFFICE: 30 Church St.
PITTSBURGH OFFICE: 544 Union Trust Bldg.
HAZLETON, PA., OFFICE: 705 Markle Bank Bldg.

of Ideal wall construction, which was erected by the brick manufacturers of that city. The house created a great deal of attention and interest and undoubtedly will help to stimulate the sales of brick in that locality.

SHIPPING TILE TO HONDURAS

The Roper-Strauss-Ferst Co., tile manufacturers of Birmingham, Ala., has been shipping a considerable amount of tile to two big jobs in Sieba, Honduras. One of these jobs is a large hospital.

SAVE THE DOOMED COCKROACH

L. L. Stephenson of Birmingham, Ala., is advertising brick from an entirely new angle. In the newspapers of St. Petersburg, Fla., he has recently run ads which class the building of frame houses with the "great humane movements now sweeping the country." The following is a part of his ad which shows how he is boosting brick by laughing at the people for "providing homes for aged, infirm and orphaned cockroaches."

"Along with the great humane movements now sweeping the country, comes one of great importance to the people of St. Petersburg. This consists of a comprehensive plan to provide living and sleeping accommodations for aged, infirm and orphaned cockroaches.

"These Florida pets, whose complete extermination is threatened by the building of brick houses, are looking for their sole preservation to those kind hearted individuals who are willing to provide them with nice wooden houses, whose walls, floors and corridors afford the most delightful accommodations for Papa and Mamma Cockroach and all the little Biddie Roaches.

"What can make brighter a homecoming, than to have a whole family of these floor canaries, from great-great grandpa on down, greet the weary travelers as he or she swings open the front door after a two-days' absence. There are perhaps two or three additional generations of the little scamps, which have come into the world in those few days, who rush to the door to get the first view of their big human benefactor. Then scurrying back under baseboards, thru book cases, and back of door jambs, they return to their cozy little nests in the walls to await the next call for lunch.

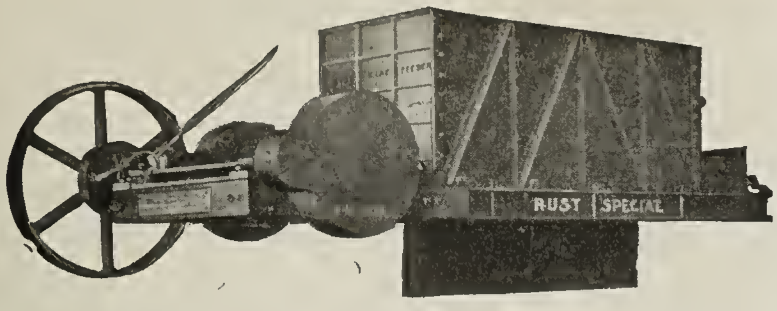
"Only by building more wooden houses can we properly take care of these eight legged little playmates. If the present trend to brick building continues, the cockroach will become as rare as the Egyptian scarab."

LEASE LAUREL BRICK & SAND CO.

The Laurel Brick & Sand Co. has leased to Jesse S. Miller, of Durham, Conn., the mines and quarries, including the buildings in the Maromas district, owned by the company, a report states. The lease covers a period of 20 years. John O. Shares, of Hamden, and William E. Perkins, of New Haven, have leased from the Laurel Brick & Sand Co. the brick manufacturing plant owned by that company in Maromas. The lease is for a period of 25 months beginning last March. Mr. Miller, it is understood, is to pay the Laurel Brick & Sand Co. a royalty on all feldspar, quartz and other minerals taken from the mines or quarries of the company which he has leased.

$20,000 IN COFFERS FOR GEORGIA SCHOOL

Construction work on the initial unit of the School of Ceramic Engineering at the Georgia School of Technology in Atlanta, is expected to begin early in January of next year, according to an announcement recently made by B. Mifflin Hood, of Atlanta, president of the B. Mifflin Hood Brick Co., and chairman of the committee in charge of the establishment of this school. Until the new building is completed and ready for occupancy the ceramic engineering department will



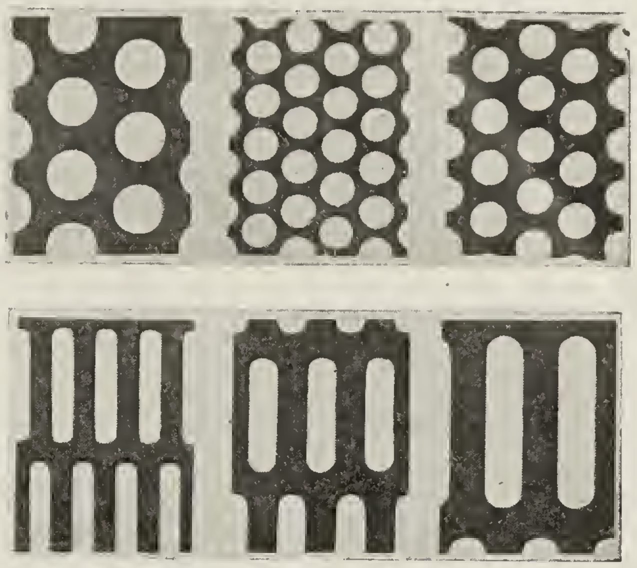
Improve Your Mix
with the
MARION
"RUST SPECIAL"
Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing Rust Feeder and full line of Marion clay plant equipment.

Marion Machine Foundry & Supply Co.
P. O. Box 395
MARION, INDIANA

Perforated Steel Screens



For Screening Clay, Shale, Sand, Gravel, Stone and Cement

All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

Sheets furnished flat or rolled to shape for revolving screens.

THE HARRINGTON & KING PERFORATING CO.
635 N. Union Ave., Chicago, Ill.
NEW YORK OFFICE: 114 Liberty St.

"COSTS CUT IN HALF
with a
BAY CITY EXCAVATOR"

The Ontario Sewer Pipe and Clay Products Co., Ltd., Minico, Ontario, say of the Bay City Excavator:—

"We saw this shovel advertised, and after making thorough inquiries and inspections we installed it early this spring. Our costs have been cut in half and we are hauling far above former capacity to stock our sheds."

Send in your inquiry. Production costs MUST be lessened

THE BAY CITY DREDGE WORKS
BAY CITY, MICHIGAN
New York Office—154 Nassau St.

The False Note—*That Spoils An Act*

Just one false note—and an otherwise splendid rendition is spoiled! And how insignificant just one note seems. Yet how small the margin between success and failure! In brick and ceramic work a variation in temperature may spoil an entire burn! Why run the risk when positive temperature control is within your easy reach? Thwing Pyrometers, used with Thwing Charts, supply a working guide that any burner can follow. Their use so tangibly increases kiln efficiency, that innumerable kilns are equipped with Thwing Instruments. Interesting Pyrometer literature is available upon request. Write for it.

THWING
INSTRUMENT CO.
3347 Lancaster Ave.
PHILADELPHIA, U.S.A.

Thwing
PYROMETERS

139

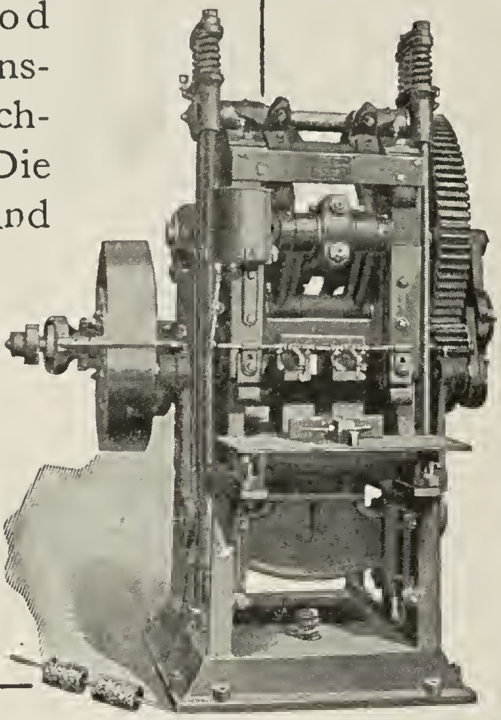
ROBINSON
CLAY MACHINERY

See Our Catalog in the Clay Products Cyclopedia

ROBINSON equipment includes everything for the clay plant.

We manufacture the Lakewood Dryer and Transfer cars, the Richardson double Die Steam Repress and the Pittsburgh Hot Air Dryer, mine cars and barrows.

Frank H. Robinson
Incorporated
918 Behan Street, N.S.
PITTSBURGH, PA.



HY-GRADE MANGANESE CO.
WOODSTOCK, VA.

Miner and Grinders

Especially Prepared for Brick Making

be located in one of the other buildings on the campus. The new building probably will not be ready before the opening of the 1924 fall term at the school.

The amount subscribed for the new school by the brick and clay products industries and private citizens and other industries of the state is now well in excess of $20,000, including $10,000 appropriated by the Georgia Legislature, which is ample to insure the establishment and operation of the new department.

BUILD ELECTRIC HOME OF BRICK

It is interesting to note that what is termed an ultra-modern house, a home equipped thruout with electrical appliances of every description, was built of good old brick as the most modern and best material to be had. The picture here shows a home built in River Forest, Ill., a suburb of Chicago. This home has been placed on exhibition and is known as the modern electric home. Thousands of people have passed thru it, inspecting it with a view to gathering new ideas. The brick used in the construction of the home is a Kittanning buff brick supplied by the Wisconsin Lime & Cement Co. of Chicago. It is laid up with a struck joint in yellow mortar corresponding to the color of the building itself. It is interesting to note that prior to the selection of this brick for the home it was subjected to an absorption test and was immersed in water for 48 hours. After that time it was taken out and weighed and found to have absorbed no water whatsoever. Its builders, therefore, advertise the home as being "impervious to moisture."

Modern Electric Home Built of Kittanning Buff Brick

EVANSVILLE PLANT IS BUSY

With three plants running, brick production continues at a steady pace according to a statement by John Andres, secretary-treasurer of the Standard Brick Co., Evansville, Ind. There is a shortage of labor at the plants. Orders for brick for five new homes were received by the company last week.

LOUISVILLE COMPANIES EXHIBITING

The Coral Ridge Clay Products Co., P. Bannon Pipe Co., and Southern Brick & Tile Co., all of Louisville, Ky., had displays of their products at the Kentucky State Fair the week of September 10, and were well pleased over the fact that the weather man sandwiched in a dry week between a couple of wet ones, resulting in a record breaking attendance at Louisville for the Fair.

The Southern Brick & Tile Co., and P. Bannon Pipe Co., are arranging to have exhibits at the second annual Better Homes and Building Exposition the week of October 22, at the Jefferson County Armory.

Burn More Ware
Burn It Better
Burn It Cheaper

A Russell tunnel kiln will burn your ware successfully, economically and rapidly as it has burned many other products in all parts of the country.

Send our engineers your burning data and they will figure savings possible with a Russell tunnel kiln.

Russell Engineering Company
Boston ST. LOUIS New York

Russell

IDEAL LOCATION
for CLAY PLANT

The Lake Erie, Franklin & Clarion Railroad serves the greatest industrial section in the world.

Of particular interest to prospective builders of clay plants is the combination of resources found along the right of way of the L. E., F. & C. clay adaptable for fire brick, face brick, paving brick, common brick, tile, etc., along with an abundance of high grade coal, are found in adjacent deposits. Power is available, trained labor is present in numbers, and a fertile market for clay products is adjacent. Transportation connections with all large lines.

When sending for information specify what type of material you are interested in

Lake Erie, Franklin & Clarion Railroad
FRANKLIN, : : : PENNA.

NEW YORK BELTING & PACKING CO.
FOUNDED 1846
INCORPORATED 1856

Rubber Goods
for the Clay Industry

Test Special Rubber Belting
Indestructible Conveyor Belting
Elevator Belting
Firo Superheat Sheet Packing
Indestructible Sheet Packing
Cobbs Piston Packing
Steam Hose Water Hose
Pump Valves

NEW YORK BELTING & PACKING CO.
New York Boston Chicago
Philadelphia Pittsburgh
St. Louis Salt Lake City
San Francisco

THE MINTER SYSTEM
200 Lbs. Coal per Ton of Ware

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. Saving first cost of 6 tunnels and equipment.

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

DON'T BUILD BEFORE YOU KNOW

The Minter System Plants are Producing the Cheapest Building Material made in America today.

The Minter System

HOME OFFICE
Albany, Georgia

BRANCH OFFICE
215 Doctors Bldg.
Columbus, Georgia

Why Pay Steam Shovel Costs?

Why put up with the expense of a watchman? Why pay the cost of coal? Why haul water and be bothered by the troubles of steam when the sturdy Northwest brings constant service plus the economy of gasoline.

NORTHWEST ENGINEERING CO.
1224 Steger Bldg., Chicago

NORTHWEST
GAS or CRANES · SHOVELS · DRAGLINES ELECTRIC

Ideas Are Money

THAT is why "101 Ideas for Improving the Clay Plant" shall be worth real dollars to every owner, operator, manager or superintendent of a clay products manufacturing plant.

This is a book of 128 pages, containing exactly what its title indicates—101 bona fide ideas fully illustrated. It presents no theories of cost reducing or untried ideas which might seem good, but every one of the ideas presented has been tried out in actual service in the clay plant.

Only a limited number of copies has been printed. Get yours now!

Book Dept.

BRICK AND CLAY RECORD
407 S. Dearborn St.
Chicago, Ill.

STANDARD BRICK REORGANIZED

The Standard Brick Co., Crawfordsville, Ind., reorganized and incorporated under the laws of the state, will file a petition asking for a permit from the securities commission to issue bonds for the purpose of carrying on the business of the company. In accordance with its policy to push operations the directors will call a meeting of stockholders in about 45 days. Nothing can be done on the construction of the large new plant north of the city until permission is given by the securities commission to issue the bonds. Directors of the new company are O. R. Swaim, P. J. Beisel, T. H. Stoops, C. R. Lane, Fielden Morin, D. P. Siminson and W. B. Cox.

TO LICENSE CONCRETE BLOCK MAKERS

An ordinance licensing concrete block manufacturers, giving the Evansville, Ind., building inspector power to revoke licenses where the manufacturers fail to comply with the specifications outlined, will be proposed by Building Inspector Kerth.

The ordinance will specify that all concrete blocks for building purposes have a minimum compression strength of not less than 750 pounds to the square inch and must meet the proper absorption tests. No composition ingredients are specified in the proposed ordinance, it being taken for granted that a sufficient amount of cement will be necessary to obtain the required compression.

WITHDRAW RATE INCREASE

The railroads operating in Kentucky have withdrawn the increase of 25 per cent. in intrastate rates, which were to have become effective at the time new interstate rates were to have gone into effect. The Interstate Commerce Commission held up the interstate rates, but could not have controlled the intrastate matter. However, the Kentucky Railroad Commission was also taking a hand in the matter, with the result that there has been no advance.

DOLLINGS CONCERN TO "COME BACK"

John S. Rawley, one of the ablest attorneys in Indiana, has about completed a plan for the reorganization of the Clay Products Co., of Brazil, Ind., that he believes will meet with the approval of Bert McBride, the receiver of the company. The Clay Products Co. was one of the Dollings concerns that was placed in receivership when a receiver was appointed for the R. L. Dollings Co.

Mr. Rawley will not make the plan of reorganization public until Mr. McBride has passed on it, and the court has approved it. It is believed by persons familiar with the situation that, if the company is reorganized and is not overloaded with lawsuits and bankruptcy proceedings, it soon will be on its feet and become a going concern; that all creditors will be paid in full and the preferred stockholders will get a fair return on the money they put into it.

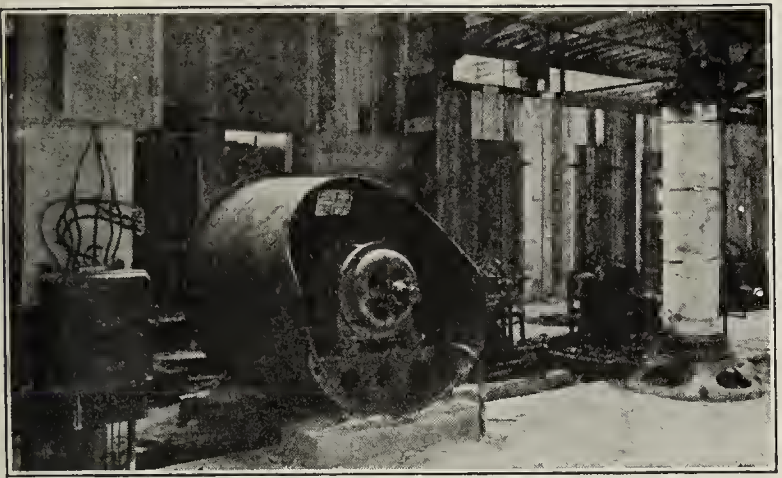
PROGRESS AGAIN OPERATING

Following some months of delay in getting in new machinery and getting things ready to run, the Progress Pressed Brick Works has resumed operations at its plant at Louisville, Ky.

CLAY AND RAILROAD MEN MEET

Representatives of various railroads in the vicinity of New Ulm, Minn., as well as officials of concerns manufacturing products used in tiling and drainage projects, held a gathering at Mankato, recently. The meeting, which was presided over by J. H. Shoemaker, traveling inspector for the freight department of the Omaha railroad at Minneapolis, was in the nature of a business promotion meeting. A large number of

Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

Ask for information regarding T-J System of Burning Oil.

Tate-Jones & Co. inc.

Furnace Engineers Established 1898

PITTSBURGH, PA.

New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis

"Our 'A' ERIE has been on the job for 30 months and our total upkeep expense has been only $49. This was entirely for dipper teeth and hoisting cable."—*J. S. Boone, Oconee Brick & Tile Co., Milledgeville, Ga.*

Increase your profits by reducing costs—

The "A" ERIE will save you money by cutting down your pit costs. Lower first cost—and less operating cost.

In output, this 13-ton shovel compares very favorably with shovels 7 to 8 tons heavier and costing $1500 to $2000 more. Has often dug 300 to 400 cu. yards per day in stiff clay or shale; in stripping off earth, as high as 700 cu. yards per day.

And you will find it far cheaper to run. Carefully checked records show that ERIE Shovels cost only ⅓ as much for upkeep, and *make a corresponding saving in working time.*

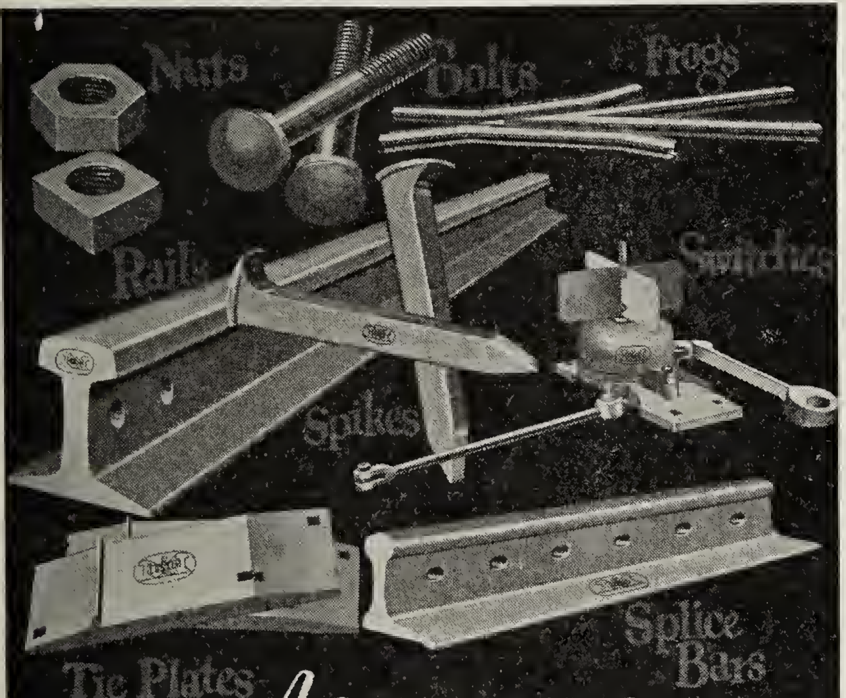
Write for full information, and photos of "A" ERIES excavating clay and shale — ask for Bulletin B-22

ERIE STEAM SHOVEL CO., Erie, Pa., U. S. A.

Builders of ERIE Steam Shovels and Locomotive Cranes

Branch Offices and Representatives throughout U. S. A.

ERIE Revolving Shovels



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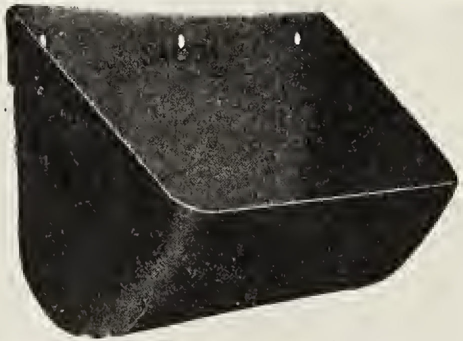


Fig. 196. Low Front, for handling damp substances that will not discharge easily from the regular depth bucket.

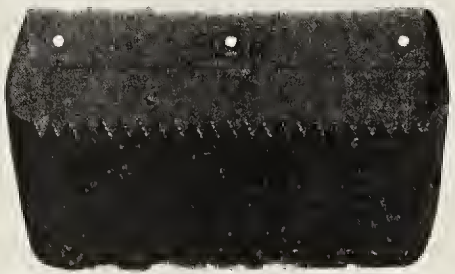


Fig. 152. Toothed Edge—for handling materials which are liable to pack in the elevator boot, or which for other reasons require the use of a digging edge.

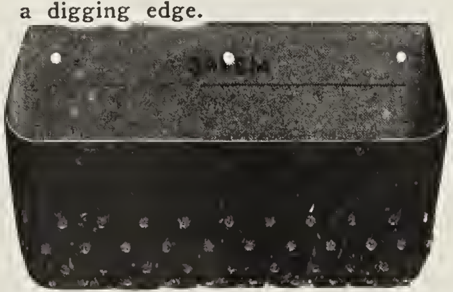


Fig. 156. Perforated—for handling wet substances which require draining during the elevating process. Perforations afford outlet for air and water in the "take" and facilitate delivery by inletting air when the bucket is inverted.

SALEM

Genuine

Elevator Buckets

Since 1880, when Salem Buckets were awarded First Premium for superiority, no other make of bucket has approached the Salem in quality, long wear and unusual service. It is made in many different sizes and gauges of steel ranging from 24 gauge to 6 gauge, and is adaptable for handling materials of practically any size, shape or weight.

Our ability to furnish special buckets made up in accordance with your specifications enables us to offer excellent service and prompt delivery.

Write for Catalog 3625

MULLINS BODY CORPORATION

Successor to

W. J. CLARK CO.

101 Mill St., Salem, Ohio

ATLAS
EXPLOSIVES
for quarrying

THE use of millions of pounds of Ammite demonstrates its efficiency. It is non-freezing, and—you do not have to endure a "powder headache" as when handling ordinary forms of dynamite. Ammite, made in various grades, requires no thawing, saves time and labor, cuts the cost of blasting. Let the Atlas Service Man help you determine what grade will save money for you. Write nearest Branch.

AMMITE
the all-year-round explosive

ATLAS POWDER COMPANY
WILMINGTON, DEL.

Branch Offices:
Allentown, Pa.; Birmingham, Ala.; Boston, Mass.; Charleston, W. Va.; Chicago, Ill.; Des Moines, Iowa; Houghton, Mich.; Joplin, Mo.; Kansas City, Mo.; Knoxville, Tenn.

ATLAS EXPLOSIVES

Branch Offices:
McAlester, Okla.; New Orleans, La.; New York City, N. Y.; Norristown, Pa.; Philadelphia, Pa.; Pittsburg, Kans.; Pittsburgh, Pa.; Pottsville, Pa.; St. Louis, Mo.; Wilkes-Barre, Pa.

Northwestern and Omaha agents were present as well as representatives of brick and tile and clay products concerns in the southern part of the state and northern Iowa.

BRIDGEWATER NOW USING OIL

The Bridgewater (Mass.) Brick Co. is the last of the brick plants in that locality to abandon the use of wood in brick manufacture, and install oil burners with which to burn the brick.

FIRE DESTROYS OLD PLANT

Fire destroyed the brick works, owned by former Magistrate James Romig, of Boston, at Cresmont, near Willow Grove, Mass. on September 10. The brick plant has not been in use for several years.

CLAY PRODUCTS IN GOOD DEMAND

Demand is good in Louisville, Ky., on both hollow tile and brick, while drain tile business has been good, and sewer pipe business has been abnormally heavy due to the large quantity of material needed in making sewer connections from new homes, and the large amount of sewer work now being done in the city and state. Drain tile demand, while largely from the farmers, takes in some business in new subdivisions, and from the great game of golf, as modern golf greens are tiled.

HOLYOKE ADOPTS OIL BURNING SYSTEM

The Holyoke Brick Co. in Willimansett, Mass., have replaced the cord wood fires at the brick plant with oil burning kilns. These are giving great satisfaction, and are also proving very economical as the wood fuel has, in recent years, been a big factor in the high price of manufacturing brick.

SUSPEND ST. LOUIS RATES

Cancellation of commodity freight rates on brick and drain tile from St. Louis to Nebraska stations on the Chicago, St. Paul, Minneapolis & Omaha Ry. and the substitution in lieu thereof of combination rates proposed by the Chicago & North Western Ry. has been suspended from September 15 until January 13, 1924 by the Interstate Commerce Commission. To illustrate: the present commodity rates on brick in cents per 100 pounds, and the combination rates proposed to apply from St. Louis to Nashville, Nebr., are 11.5 and 18.5 respectively; to Florence, Nebr., 11.5 and 18; to Oakland, Nebr., 16 and 20.5; to Emerson, 18.5 and 22.5; Dakota City, 14.5 and 23.5; Crofton, 21 and 25.5; Bloomfield, 22 and 25.5; Hoskins, 20.5 and 24; and Wayne, 20.5 and 23.5. The Commission has announced that it will make an investigation to determine whether the proposed rate increases are justified.

OMAHA PLANTS STOCKING BRICK

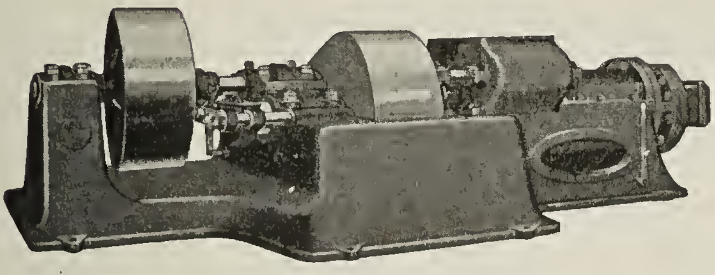
Kritenbrink & Son, Smith Brick Co., and the Omaha Clay Works, all of Omaha, Nebr., are building up huge brick supplies to take care of the fall demand. At this time they have more than 5,000,000 brick on hand, a number considerably above the average. A fair and probably a good demand for brick this fall is expected by these three plants. All of the plants have been running since April and are turning out an average of 120,000 brick daily. Smith Brick Co., however, has been operating half time since a month ago. This firm alone has 2,500,000 brick on hand, 1,500,000 larger than the supply at this time last year.

NEW YORK STRIVES FOR BIG PRODUCTION

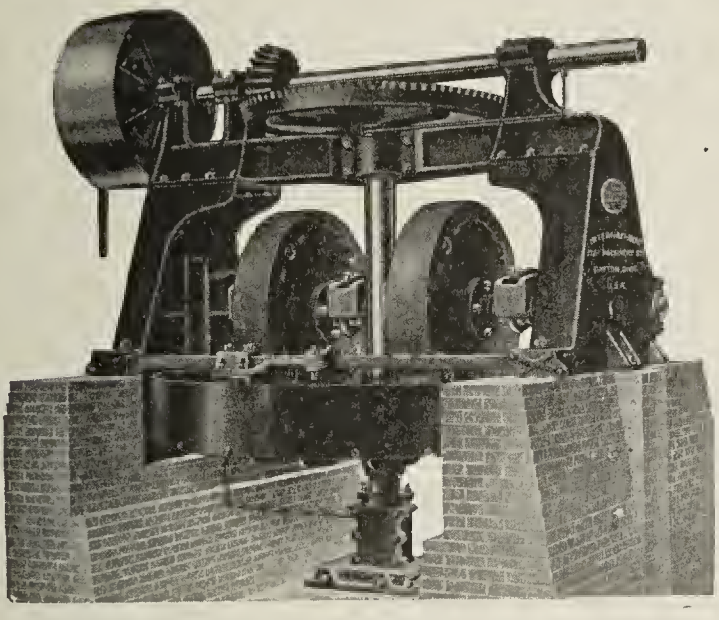
Hudson River common brick manufacturers are endeavoring to put at New York's command between the close of navigation 1923 and the opening of the river about 650,000,-

INTERNATIONAL

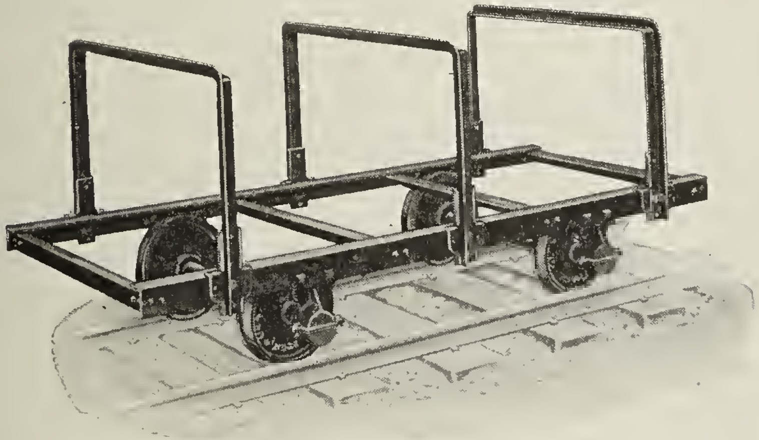
Equipment Pays



Auger Machines
Pug Mills



Dry and Wet Pans



Dryers and Cars

See Our Catalog in
the Clay Products
Cyclopedia

INTERNATIONAL CLAY MACHINERY CO.
DAYTON, OHIO

U. S. BUREAU *of* MINES REPORTS *on* GEORGIA CLAYS

"Refractory Possibilities of some Georgia Clays," by R. T. Stull and G. A. Bole, issued by the U. S. Bureau of Mines, concludes:

"Of the different raw materials used in the manufacture of refractories, clay must be relied upon in the future, as in the past, to furnish the bulk of commercial refractories because of its greater abundance, wider distribution, and broader application.

"The Georgia sedimentary kaolins, bauxite clays, and bauxites tested show deformation values from cone 34 (3290° F.) to above cone 39 (3470° F.). They showed superior load-carrying capacity and good resistance to spalling.

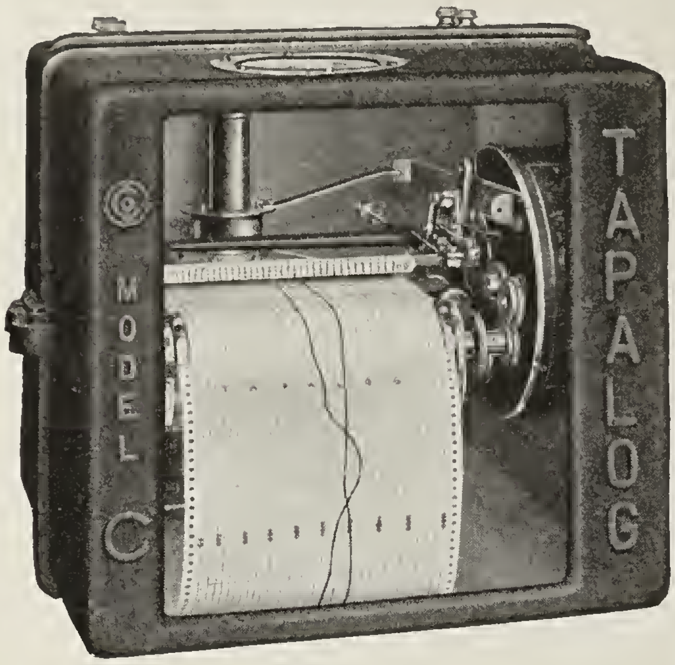
"Enough test work, as well as commercial manufacture has been done to demonstrate that these refractory clays may be made into fire brick in a practical way both by the dry press and slush-mold repress processes.

"Tests in malleable and electric furnaces, as well as ladle linings and boiler settings, have indicated that fire brick made from Georgia sedimentary kaolins were at least equal to, and, in the majority of cases, superior to fire clay and silica brick."

Reprints of this and other reports mailed on application

J. M. MALLORY
General Industrial Agent

CENTRAL *of* GEORGIA
RAILWAY COMPANY
233 West Broad Street
SAVANNAH, GA.



Indicating and Recording Pyrometers

Let Wilson-Maeulen help to solve *your* problems. Our experts are at your service.

◆

Mr. Ceramic Man:-

What would you think of a Steamship Company that purchased compasses, to guide their ships and cargoes, upon a price basis!

It isn't done that way.

Neither should pyrometers be bought on that basis—they are the compasses of the "Seas of temperatures."

Ask us to tell you about the *three* cost factors that you should consider.

WILSON-MAEULEN CO.
Makers of Rockwell Hardness Testers and Wilson Maeulen Recording Pyrometers
731 EAST 143RD ST. NEW YORK

000 common brick whereas they had available last year only 400,000,000. At all the plants operating between Haverstraw and Mechanicsville on both sides of the river every available man and every ton of coal is being employed to lay up a reserve so that at no time need those requiring Hudson brick turn to other sources for their supply.—Dow Service Report, September 22.

BLAME BRICK MEN IN NEW YORK

Responsibility for conditions in the present building crisis in New York has been placed on the large brick operators in the metropolitan district, at Yonkers, N. Y. They are charged with having a monopoly of the brick market there and with regulating market conditions to suit themselves, placing the price of brick at such a level as to prevent the small buyer from entering the market. Secretary Donnelly of the New York Building Trades Employers' Association said he believed there was no such a thing as a corner in the brick market, the demand for brick being too great to permit one. He said: "The only control that could possibly exist today would be a control of floating equipment. Barges and tugs are costly and add greatly to the problems which confront brick operators in transporting brick from the plants to the city for delivery."

CLAYCRAFT PLANTS AT CAPACITY

The Claycraft Brick Co., operating plants at Shawnee and Groveport, Ohio, is having a good trade for the time of the year according to P. H. Hodges, superintendent. Both plants are being operated to capacity and shipments are going out promptly as a rule.

TAKE OVER HINDE BRICK AND TILE

The Hinde Brick & Tile Co. of Sandusky, Ohio, who discontinued business in March of this year, has been taken over by the Erie Brick & Cement Products Co., which company is operating the plant. Bert D. Smith is secretary of the company.

MEDAL TO USE ELECTRIC POWER

Electric power is being installed at the Carrolton, Ohio, plant of the Medal Paving Brick Co. Superintendent Howard Hawk says the change over to the new power will be made in a short time. The plant is now making 32,000 brick daily at its local plant.

A CORRECTION

In the September 18 issue of Brick and Clay Record appeared an item calling attention to a fire at the Massillon (Ohio) Stone & Fire Brick Co. This item stated that the fire loss was approximately $1,000. At letter from T. E. Eayrs, general manager, states that the fire was very insignificant and that the damage hardly amounted to $200.

CENTRAL CLOSES SHAWNEE PLANT

The Central Refractories Co., which has headquarters in the Atlas Building, Columbus, Ohio, has closed the plant at Shawnee, Ohio, temporarily for the purpose of making needed repairs to the kilns and machinery. Several of the kilns will be rebuilt while some new machinery will be installed. The plants in Pennsylvania are all being operated, according to C. B. Young, president of the company.

FIRST OHIO CLAY PLANT 1792

Since Ohio has taken her place at the top of the list of states in point of extent and value of her clay industries and ceramic engineers claim that the state has only begun to develop her natural resources of this kind, it is interesting to note that the first authentic instance of the establishment of a clay working industry on Ohio soil was when Commodore Whipple and Pelatiah White asked, in 1792, for leases from

The Ideal Machine for the Smaller Plant

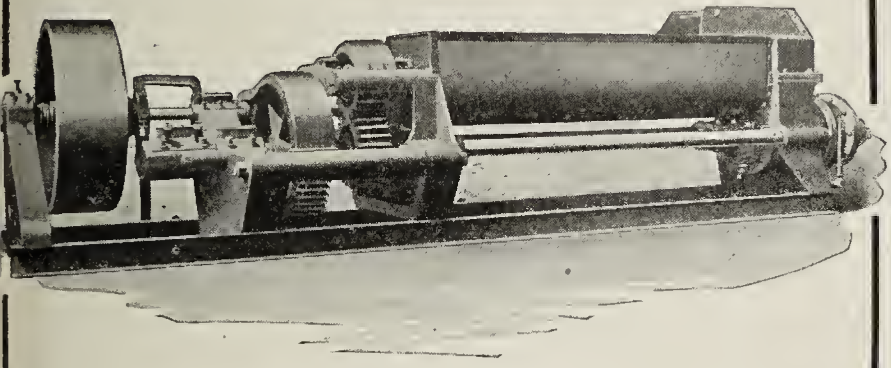
For plants manufacturing both tile and brick, no machine will give greater satisfaction—all the way through—than the Freese Union Machine.

It has a forced feed into the auger, giving a steady, uniform clay column—so important in the manufacture of tile, and of considerable advantage in the manufacture of brick.

It is inexpensive to install—eliminating the structural work necessary to support a separate pug mill—

And it is economical to operate—its one set of gears and one driving belt creating less friction, consuming less power, and requiring less repairs.

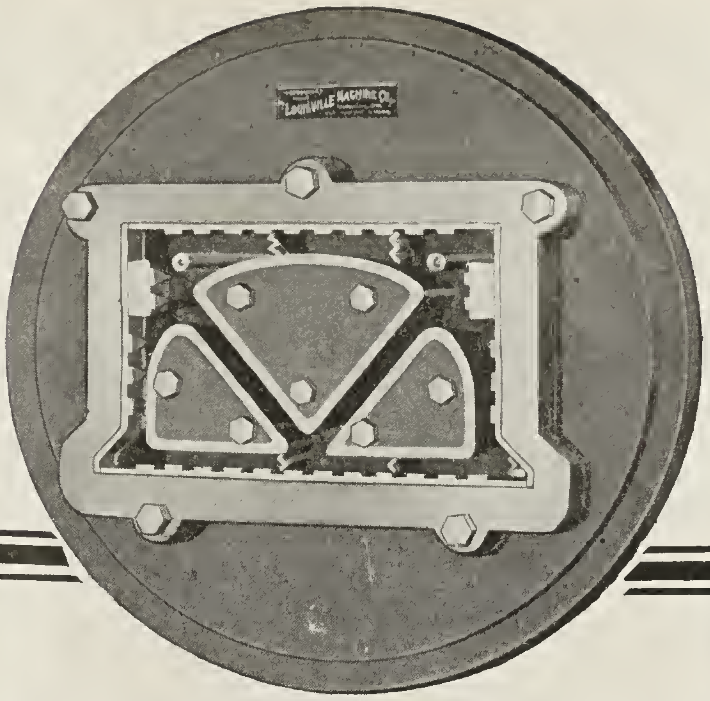
It is the ideal machine for the smaller plant.



Freese Union Machine

E. M. Freese & Company
Galion, Ohio

Dependable Machinery of Proven Efficiency



GOOD WARE BEGINS AT THE DIE—*IF IT'S A LOUISVILLE*

Make certain you have the right die by making sure that it is a LOUISVILLE.

Some of the best ware in the country is being formed in LOUISVILLE DIES. Clay products manufacturers know and appreciate their service and design. They realize that a Louisville Die never has been and never will be recommended where it doesn't belong, because we make a die for every purpose.

Tell us your needs.
We have just the die you want.

The LOUISVILLE MACHINE
MANUFACTURING CO.
LOUISVILLE, OHIO

"IF IT'S DIES YOU WANT
WE MAKE 'EM"

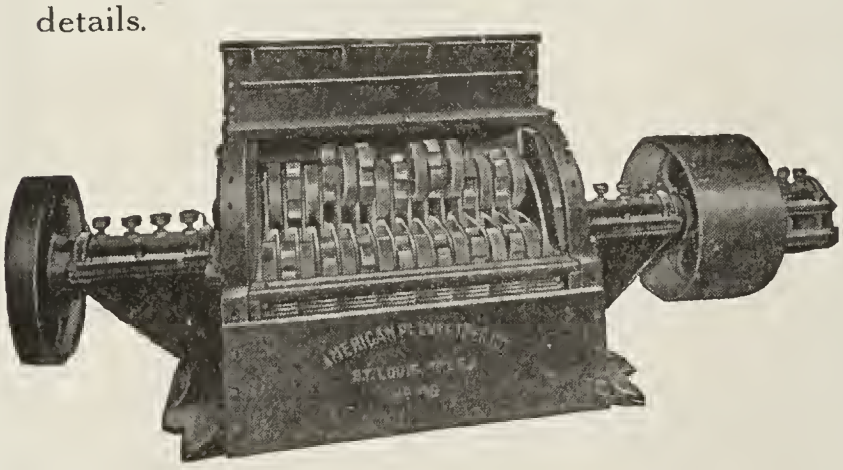
We manufacture Hand Cutting Tables, Piano Wire Screens, Friction Winding Drums, Conveyors, Elevators, etc.

Can You Say this Much for Your Crusher

1. That it will handle one million tons of R. O. M. coal and reduce it to the size you want, before a repair part is needed.
2. That it will do this work at 600 R. P. M. and use a minimum amount of power to do its job.
3. That there is sufficient flexibility of its working parts to handle all foreign bodies and thereby eliminate breakage in the machine.
4. That when after long service, one of the rings must be replaced, it can be done as easily as putting a new bit in a brace.

Every Owner of an American Ring Crusher

knows that these are qualities found only in the type of equipment that he uses. Reduced operating cost and elimination of costly shutdowns have resulted from every American Ring installation. We would like to explain more fully the theory of ring crushing. Just a note that you are interested will bring full details.



One of the American Ring Crushers. Every one is built to the job.

American Pulverizer Co.

"We Crush Anything"

18th and Austin St. Louis, U.S.A.

the common land for purposes set forth in petitions which were submitted to stockholders in the Ohio company at Marietta. Whipple wished to establish a horse mill, but Pelatiah White's object was to establish a pottery.

METROPOLITAN PLANTS AT CAPACITY

Altho new business is not of the volume satisfactory to officials of the concern, the Metropolitan Paving Brick Co., of Canton, Ohio, is operating its plants to capacity, officials stated.

Brick shipments from the Canton plants of this concern are going forward on schedule and no car trouble is being encountered, officials of the company said. The car situation has adjusted itself in recent weeks and all the cars needed are being delivered to the plants on short notice. Officials said they anticipated that shipments would go forward regularly right up until the weather becomes too bad for outside construction. It will probably be early in December before production schedules will be reduced to a minimum. Prospects for a banner spring are ahead, said an official of the company.

There is no change in prices and none is anticipated for some time to come. Sufficient orders are on hand to insure steady operation of plants until the first of the year, it was said.

FILE BANKRUPTCY PETITION

The Bingen Brick Mfg. Co., Bethlehem, Pa., has filed a voluntary petition in bankruptcy, showing liabilities stated as $107,658, and assets of $98,146. George F. Coffin has been appointed referee in bankruptcy for the company.

TEXAS CLAY PLANT INCORPORATES

The Phoenix Brick & Tile Co. has been incorporated in Dallas, Tex., with a capital stock of $40,000, by C. W. Martin, H. E. Spafford and P. S. Russell.

FRASER TAKES OVER STAMFORD

The Stamford (Tex.) Brick Co., whose incorporation was announced in the last issue of Brick and Clay Record, has been taken over by the Fraser Brick Co. of Dallas and will greatly augment its capacity. The Fraser Brick Co. owns plants in Athens, Dallas, New Braunfels and Stamford.

BRICK POPULAR IN TEXAS CITIES

Building activities in Dallas and Houston, where permits for the year will total more than $15,000,000 in each city, have been marked by the unprecedented use of brick and tile, and other clay products in the construction of buildings. Practically every one of the hundreds of residences in Dallas costing more than $5,000 that have been built this year are of brick veneer. This type of material seems the most popular of all building materials, in the larger cities of the state.

EXHIBITS AT CANADIAN EXPOSITION

Clay Products, Ltd., Toronto, had an excellent exhibit at the Canadian National Exhibition. Besides brick, tile, sewer pipe, wall coping, flue lining, chimney tops, and so forth, the company had a large sewer built of Ferguson sewer block manufactured by the Dominion Sewer Pipe Co., Swansea, Ont. This attracted considerable attention.

A MACHINE THAT LAYS BRICK

Few trades connected with housing have given rise to more discussion than that of bricklaying, and it is still an unsolved problem how many bricks a competent English bricklayer ought to lay in a working day. Figures varying between 200 and 800 have been suggested, but hitherto it has only been possible to compare one man's work with another's. Now, however, after five years of experimenting, a machine for laying bricks has been perfected. The "K" erector, as it is called, is made by Sir Wm. Arrol & Co. (Lim.), of Glasgow, and is being used on a housing scheme in the Glasgow area. It consists of tubular uprights, connected at the top and bottom, and free to travel on rails laid along the outside walls. Across the width of the house to be built, and carried on the uprights, is a boom, which can be raised and lowered. On it are mounted a small travelling carriage, the mortar tank, and the bricklaying mechanism. With the last-named over the starting point the laying wheel rotates, taking two bricks at a time from the hopper, while the measuring mortar wheel spreads the mortar. Thus, as the carriage moves across the boom, one row of bricks is laid.

When the end of the wall is reached the direction of the carriage can be changed, and the movement of the machine adjusted so as to lay bricks along one of the side walls, and then across the back and up the other wall to the point where the work was started. After a course has been laid all round, the boom has to be raised by the thickness of one brick, plus the mortar joint, and the operations are repeated until the desired height is reached. Provision is made for automatically cutting out the supply of brick and mortar wherever a doorway or window intervenes. The feeding of the brick into the hopper is best performed by hand, and the speed at which the machine lays them is regulated thereby. The average is said to be between 1,200 and 1,500 brick per hour. Three men are required to work and feed the machine, and the most suitable driving power is a three-horse power electric motor; but where current is not available a small petrol engine can be fitted to the traveller.—The Ironmonger. (British)

TO BE OR NOT TO BE—A BRICKLAYER

Cartoonists, humorist writers, judges, doctors, lawyers, oh, just everybody, have been poking fun at, envying, willing to swap jobs with the bricklayer, and wondering why they did not learn the bricklaying trade in preference to their own, the bricklayer getting from $11 up per day.

Now comes the board of education of the city of Denver, Col., and says it has approved a class in bricklaying for apprentices. The request came from the Colorado Clay Products Co., because there is a shortage of bricklayers which is hurting the manufacturers.

J. J. Stein, executive secretary of the clay company, admits that all the brick and clay manufacturers in the state are interested in securing a larger number of bricklayer apprentices, because of the shortage of bricklayers, and that this request to the Denver schools is but a part of a national movement now on.

Talk to a bricklayer about his large pay and he will say: "Suppose I do get $11 a day, I do not work the year round; I must lay off two or three months because of the freezing weather."

Out in Denver a bricklayer will lose probably two months out of a year, because it is freezing or folks fear a freeze might ensue and hold off building. Our first thought might be, pity the poor bricklayer; we hadn't thought of that. Or, we knew that there was a catch somewhere.

Let us see.

There are 313 days in the year, excluding Sundays, and 313 times 11 is $3,443. There are 365 days in the year, and 3,443 divided by 365 gives us $9.43 for each day in the year, if the bricklayer works the full 313. Suppose he does lose two full months, that is, he cannot work at laying brick, then what? 313 minus 60 gives us 253 days, and at $11 we get $2,783. This divided by 365 gives us $7.47.

We now see that a bricklayer can take a two months' vacation each year and still make as much money as many college men who work the full 313, and maybe get two weeks off, with or without pay.

Pity the poor bricklayer? What do you think?—J. B. Dillon.

SCHAFFER

S E CO E

If An Architect Guessed —or Estimated

WHEN it came to figuring loads and designing structures, we'd live under very hazardous conditions and in slipshod homes.

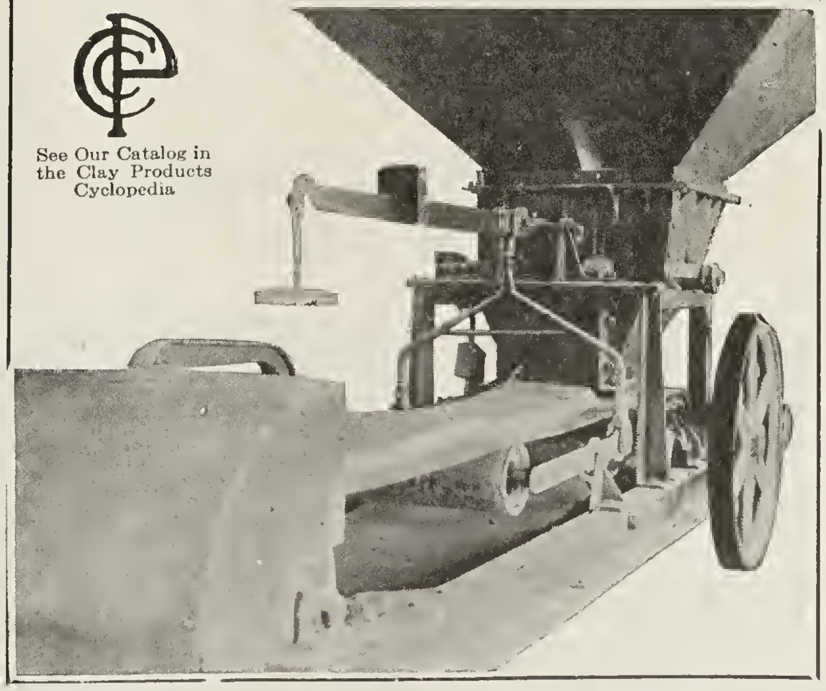
When you guess or estimate your clay mix, you run the chance of the mix's being too "short" or too "fat" and the drying and burning's claiming a huge loss.

Install the Poidometer. It feeds as it mixes, all automatically.

Write for details today

Schaffer Engineering & Equipment Company
2828 Smallman Street
PITTSBURGH, PA.

See Our Catalog in the Clay Products Cyclopedia



POIDOMETER

"Proctor" DRYERS

Famous for Economy

"PROCTOR" Dryers prove their wonderful economy in many ways.

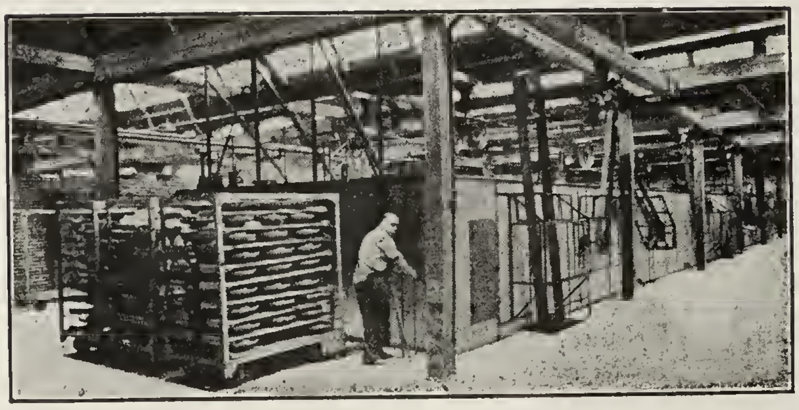
Of outstanding importance is the tremendous saving of time made by these machines wherever they have replaced other methods of drying. Not only have they radically reduced the actual drying-time for all kinds of ceramic wares, but always their systematic operation has accelerated the flow of ware to the kilns and cut down the production schedule.

Invariably the installation of "PROCTOR" Dryers saves a great deal of labor, space and steam over other methods.

Then, too, the perfect quality of "PROCTOR" drying has increased the percentage of first quality ware and decreased the loss from spoiled ware in a substantial measure.

There's a "PROCTOR" Dryer for **your** ware among the various types of these machines we build. Let us make you acquainted.

PROCTOR & SCHWARTZ, INC.
PHILADELPHIA



Tunnel-Truck Humidity Dryer for Electrical Porcelain, Saggers, Chemical Stoneware, Tile Refractories, etc.

Among Our Advertisers

Details Concerning New Models, Changes in Personel, News Matters, etc., That Our Advertisers Believe Will Interest Our Readers

BAY CITY HAS NEW MODEL

The Bay City Dredge Works of Bay City, Mich., has just put on the market a new model excavator, 16-B. This is a five-in-one machine and has attachment for a skimmer boom, ditcher boom, shovel boom, dragline boom and a crane boom.

In order to bring this new model before their customers properly this company has just issued a series of bulletins showing the machine in use. One very striking sentence in the bulletins reads—"To look upon a Bay City as an expense is fundamentally wrong, for nothing can be an expense and an investment at the same time." Another reads—"Most Bay City Excavators will pay for themselves in a few months."

This combination machine requires only one man for operation and is quickly convertible from one use to the other. It should prove very attractive to clay products manufacturers who are able to dig their raw material faster than they can use it. With this type of equipment the idle time could be spent in stripping, in doing construction or filling work, loading coal or ashes, returning clay from storage or doing some of the other hundred and one things that must be done around the plant.

These bulletins will be sent to anyone making a request for them. Owners will find that in a great many cases this new model machine will do the same work as a heavy steam shovel.

⁂

ELECTRICAL PORCELAIN DRYING EXPLAINED

Proctor & Schwartz, Inc., successful manufacturers of automatically controlled humidity drying machines, have just issued their bulletin No. 75, entitled "Drying Machinery for Electrical and Special Porcelain."

By all means, a copy of this bulletin should be in the hands of every manufacturer of electrical porcelain, whether or not his drying equipment is satisfactory. He surely can find some information of value and may learn how to improve that department considerably either at once or in the near future.

The outstanding feature of this bulletin is the use of sixteen illustrations of actual installations, under every kind of condition and requirement. There is also considerable reading matter giving information on Humidity Drying, Progressive Tunnel Dryers. Drying Control, Reduction of Loss, Time Saving, Mechanical Conveying, Labor Saving, the Automatic Conveyor Dryer and Space Saving.

Every one of these topics contains valuable data about the wonderful improvements made possible with these machines. These statements are backed up by the reproduction of letters from four large manufacturers of electrical porcelain, all of whom are satisfied costumers.

Proctor & Schwartz, Inc., are located at 7th Street and Tabor Road, Philadelphia, Pa.

⁂

Celite Products Co., Chicago, Ill., announce that their Mr. O. C. Krotz has been appointed district manager in charge with offices in the Symes Building, Denver, Colo. This will in no wise interfere with the complete engineering service in the Intermountain District, as it will be continued under Mr. Krotz's regime.

⁂

Two leaflets which are of such value that they should be in the hands of every user of explosives, have recently been issued by the Atlas Powder Co. One is an extract from a report of the Bureau of Mines—"Small-Diameter Dynamite Cartridges Inferior"—and the other bears the title "Move Your Oldest Stock First." Copies of these leaflets will be promptly furnished upon request to the Atlas Powder Co., Wilmington, Del.

⁂

The Armstrong Cork & Insulation Co., Pittsburgh, Pa. announce the removal of the Boston, Mass., office to No. 275-285 Congress St. The new location gives the company greatly extended warehouse facilities. The Boston office now carries a large stock of Nonpareil insulating materials, from which its customers in that territory can be supplied promptly. Mr. F. W. Robinson is manager.

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

A Timely Warning to Drain Tile Men

MANY BUSINESS PROPOSITIONS which are sound in principle and seemed an almost certain success failed because they were led by men who did not possess the qualifications of business leadership.

This thought has come to us following certain expressions of opinion recently given to us by men interested in the drain tile industry, to the effect that should a drain tile organization ever be formed it must be organized on the right basis and with the right men to lead it. In the forming of an association there is no more important consideration than the selection of the right leader.

These warning remarks are made because there has been a greater amount of interest manifested than ever before, since Brick and Clay Record started its recent agitation for a drain tile association. Drain tile manufacturers know that something must be done and that the time to do it is right now. Many manufacturers are afraid, however, and rightly so, that unless the project is handled right it would fail like other movements have in the past.

Before anything can be done there must be uniformity of purpose and ideals. There must be a cooperative spirit. If, for instance, the shale tile manufacturer would attempt to bar the manufacturer of surface clay tile, there would never be a powerful organization. It would simply be a house divided against itself. There is business enough for both the shale and clay tile manufacturers if they work together, but there will be little for either if they are bent on fighting each other.

The shale tile manufacturers could not organize separately without benefiting the clay tile manufacturers since any publicity work or advertising would benefit both sides almost equally. Therefore why not let all who benefit pay? This is a subject almost too silly to discuss but there have been rumors that indicated some manufacturers do not see the light.

Because drain tile publicity will benefit every drain tile manufacturer, any attempt at organization should entertain no territorial limits. In other words membership should not be confined to any certain section. It is obvious, of course, that most of the promotional work would be done in the Central States and for that reason, every manufacturer in this territory, at least, should be urged to join. A state or tri-state association can never hope to accomplish what a national association might.

The drain tile industry has seen associations of limited territorial scope in the past. It has seen these half-hearted attempts at organization fluke out and accomplish little or nothing. Lack of sufficient funds, of capable direction, of proper support and other things accounted for their failure. This is certainly not a time to form another of these "bloomers," and the drain tile men should not waste their time considering it.

If an association is formed, which is to be successful, it must be wide in scope both as to territory and nature of product; it must be properly manned; an experienced trade association secretary should be hired—one who will put his heart and soul in the work.

Managing a trade association requires a man of special talents and particular characteristics. It is an important job. The success of a trade association can usually be measured by the ability of its secretary.

Should a drain tile association ever be formed, we would urge most strongly that the points brought out here be given the most serious consideration, because we know from what several operators have expressed that this is the thought in their minds. They will not waste any time supporting a half-baked proposition.

* * *

Apropos of Engineers' "Commissions"

BRICK AND CLAY RECORD recently received a letter from a manufacturer supplying materials to clay products manufacturers. In this letter, which was published in the last issue of the journal, the manufacturer wanted to know whether it is considered ethical practice for a consulting engineer to request commissions from manufacturers who furnish material or machinery called for on contracts which the engineer has with his client. In other words, is it right for a man who builds a clay plant to demand a commission or a bonus from those who supply the equipment and materials to build the plant? This question is well answered in a letter from a reader, published in this issue of Brick and Clay Record in the department called "The Letterbox."

On the face of it such a practice would seem to us to be more in the nature of bribing than offering legitimate commission. An engineer who will not specify the equipment or material of a manufacturer because the latter refuses to give him commission cannot have at heart the best interests of his client. Certain machinery and materials are fitted for certain purposes and it is very rare, indeed, that something "just as good" can be substituted. For that reason it is necessary under the circumstances outlined above to accept either materials of less value and inferior than those which really should be specified or to pay more money for machinery which is actually better than is required for the job.

No self-respecting business house will continue to do business for any length of time with a purchasing agent who demands a so-called "commission" on every order which he places. Neither would a reputable business house have long in its employ a purchasing agent who practices such methods. No reputable architect would consider it as anything but a bribe if a commission were offered him to specify a certain material.

There is also another angle. Competition in most lines of business is keen and prices are based on the cost of manufacturing and selling. If it is necessary to add to the sales price a commission to the buyer or engineer who acted as purchasing agent, the actual price to the man who ultimately makes use of the product will be considerably higher than it should be. No material manufacturer will substract such a commission from his profits but will simply add it to the price as part of the cost.

In view of these things Brick and Clay Record would warn any clay products manufacturer to be very careful in the selection of an engineer.

1924 Prospects for Hudson River

Manufacturers Unanimously Predicting Year of Immense Activity — Are Bitter About Foreign Brick Importations — Labor Is Big Problem

NOWHERE are autumn days more conducive to the breeding of optimism than on the banks of the Hudson River, where nature does her best at this time of the year to create good cheer. Brick and Clay Record's Eastern editorial representative, during a week's travel thru the Hudson River district, found the brick manufacturers somewhat less serene in their outlook, however, than the scenic beauty spots surrounding their plants. They were not cheerless. Neither were they cheerful. They were thoughtful. For several weeks they had noted a steady recession in the insistent demand for brick which had emanated for months and months from the New York metropolitan market. Seasonable as this development was, it added to the pensiveness of their mood. Large and small, progressive and conservative, they all had discovered one or more flies in the ointment of a season which in point of the selling price of brick rolled up a new record. When they had finished enumerating what they considered the vicious vicissitudes which, in their opinion, had been visited upon their industry, they all agreed that, "Next year will break all records for building and more brick will be needed in 1924 than ever before."

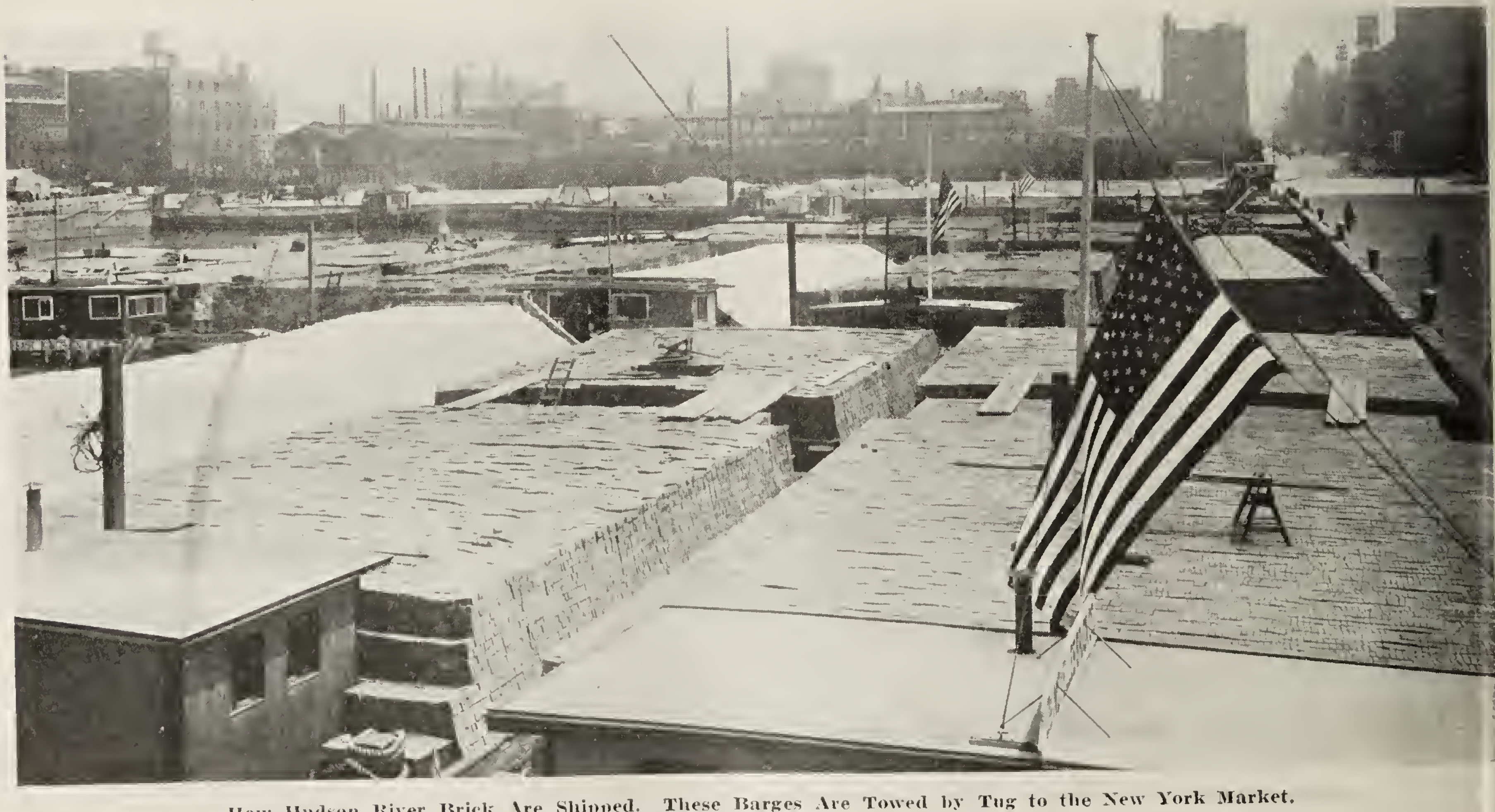
Labor Growing More Scarce

Having made it plain that, in so far as concerns the 1924 demand, there is only one opinion on both shores of the Hudson, consideration of the sundry flies in the ointment may be taken up. Foremost among these, and especially stressed by the smaller producers, is the steadily growing scarcity of labor and the equally lamented shrinkage in the quota of labor performed by each man. For the Hudson River brick manufacturer, employing from a score to half a hundred men, the year 1923 has been one constant battle against the unreasonableness of labor. Organized labor has no monopoly of unreasonableness. To plagiarize from Irving A. Ryttenberg's classics, Hudson River brickyards abound today with "every shade of negro, including high yaller, pleasing, teasing, tantalizing, marked albino and crossbreeds thrown in," altho only one color of common brick is produced. The negro laborer of the Hudson River district has stripped off every good quality he possessed in the South, and he fairly lords it over the foremen, few of whom know how to handle colored labor. "You simply can't make those fellows work," or "What are you going to do about it? They won't work," have become stock phrases coming from foremen's lips. Larger employers take this state of affairs somewhat more stoically than the smaller manufacturers. The latter see in it good money taken out of their pockets. Their bigger competitors accept it as an unavoidable item of manufacturing costs, duly to be considered in computing the margin of profit afforded by the market price. As will be revealed presently, they are even grateful that the worse evil of unionism has been staved off successfully so far from the district.

For all that, careful inquiry brings out the information that 1923 production in the Hudson River district was approximately ten per cent. greater than that of 1922.

Old Time Yards Will Never Die

In one other point, aside from that of supreme confidence in the 1924 demand, there prevails complete unanimity in the Hudson River district. One would think that with several plants being operated along the most modern lines by the side of many others in which production methods have not changed since the Civil War, some of the more thoughtful observers in the industry would incline to the view that,



How Hudson River Brick Are Shipped. These Barges Are Towed by Tug to the New York Market.

A Typical Hudson River Yard. The Picture Shows Five Brick Machine Units. The Flat Space in the Foreground Is Used as a Place on Which to Lay Brick for Drying

technically at least, the time has come when only the fittest should survive. Far from this being the case, the owners of the really up-to-date plants are agreed that the Pharaonic methods of the old-time brickyards will not only survive, but that they will always be able to compete. They base this opinion on the ground that with these old-time yards brickmaking is a sort of a family industry, handed down from father to son, and that what may be added to production costs by antiquated methods is more than offset by the economies that are possible in a small enterprise and impossible in a large one.

Foreign Brick Situation

The heart of the Hudson River brick industry is located just about half way between New York and Albany, and for two flies in the ointment the more thoughtful among the manufacturers turn their face toward the metropolis to the south and then to the state capital to the north. Down where the Hudson River becomes the North River, ship after ship flying some foreign flag has been discharging cargoes of foreign-made brick into lighters. By now the 1923 importations run into the many millions of brick,, and the Hudson River manufacturers are frankly perturbed. So far most, if not all, of this brick has been dumped into the New York market, the jugular vein of the Hudson producer. The brick manufacturer whose tributary market consists of inland cities, far from the ocean, may make light of this foreign competition, but upon many of the Hudson River brick producers it has acted much as the invasion of Belgium did upon the people of Flanders. Like the latter, many Hudson River brick manufacturers ask: "How can such a state of affairs be permitted to exist? How can any one with good American blood in his veins tolerate the bread being taken out of our mouths by the Germans who are dumping their brick into New York at all sorts of ruinous prices?"

Expect Tax Exemptions to Continue

Toward Albany the Hudson River brick industry looks somewhat more hopefully, altho by no means overcertain of success. If an extension of tax exemptions is forthcoming, the New York building boom will be more intensive than ever. If sufficient Bourbon legislators should be available to upset this hope of the building industries, there are some that feel it will spell disaster to the Hudson River brick manufacturer, with New York the only tail to his kite. On this score, however, the more outstanding figures in Hudson River brickdom feel rather hopeful. Many are politically influential, and it is hardly conceivable how, amid the present scarcity of dwelling houses in both the large and small cities of the state, any legislator with the least regard for his political future, could pull off so obvious a bonehead as to oppose any measure designed to relieve this untoward situation.

What W. K. Hammond Thinks

W. K. Hammond, who operates a brick manufacturing establishment at Dutchess Junction, and who is in intimate touch both with the production as well as the distributing end of his business, coming to New York once a week for the latter purpose, summed up the situation thus:

"If some relief is afforded to the Hudson River brick industry from the stringency of the labor supply, from the utterly unwarranted competition of foreign brick, and if the New York State housing laws continue to encourage home building thru suitable tax exemptions, we may look forward to a prosperous year in 1924.

"Wages have climbed to dizzy heights and I don't see any relief from this condition in the near future. We may be grateful, however, that labor conditions, vexatious problem that they constitute, are no worse. Unionism in the brick industry can not be tolerated. The Washburn yards at Glasco preferred shutting down to giving in to demands that would no longer have permitted them to exercise their rights as employers in their own house.

German Competition Should Not Be Tolerated

"One of the untoward conditions we face in the Hudson River district is that New York dealers and jobbers have been buying from outside sources more largely than ever before, and in their endeavor thus to cater to the New York builders they have done great harm to the Hudson River producers.

"Twenty years ago there were 500 to 550 brick machines in daily operation in this district. Today there are probably not more than 250.

"Foreign, especially German, competition," said Mr. Hammond, with much feeling "should not be tolerated at all. Congress should give us immediate relief by the imposition of a truly protective duty, unless the Executive, under the flexible tariff provisions of the existing law, has the power to come to our aid."

Ramsdell Wants Foreign Labor

H. B. Ramsdell, owner of the Dennings Brick Works at Dennings Point, one of the best equipped plants in the district, a man of wide business connections ranging from steamboat lines to large financial institutions, scion of a family that has left its indelible mark on the development of the Hudson River district, but for all that a practical brick manufacturer, refused to grow excited anent the competition of foreign brick. In that he appeared to recognize the natural workings of an unavoidable international situation in which debtor countries seek to create credit balances by the exportation of whatever commodities are available. While he did not fully express himself on this score, it was patent that he took little stock in the possibility of Congressional relief. What he did urge was the letting down of the bars against immigration, so that suitable laborers from England and other Nordic countries of Europe could be brought in in larger numbers to relieve the shortage of labor. Mr. Ramsdell's attitude seems to be that the American brick manufacturer should be put in such position by a free flow of suitable European labor as to enable him to ward off European competition rather than to have this latter competition artificially suppressed by inhibitory and perhaps economically discriminatory legislation.

Will Stock 20,000,000 Brick

Mr. Ramsdell said he expected to stock 20,000,000 brick this winter, as compared with 12,000,000 a year ago. He considered that the cost of making brick in his modernized plant was fully on a par with that produced amid antiquated conditions, blaming the expensive repairs on dryers especially for this. The ruinous leakage of 20 per cent. breakage which had prevailed at one time in the old days of hand manipulation had, however, fully warranted the innovations. Had it not been for the unwillingness of labor to produce more, much larger quantities could have been turned out and marketed this year.

Barge Service Is Excellent

An interesting feature of the Hudson River brick situation is the transportation of the brick from the yards to the metropolitan water front. This is frequently referred to as a monopoly, and this characterization at times has been distorted into one implying that this service added unnecessarily to the cost of brick landed in New York. All the brick-laden barges from the Hudson River district are towed to New York by tugs owned by the Cornell Steamboat Co. Every responsible brick producer in the district avers that the Cornell Steamboat Co. enjoys its monopoly by reason of excellent service and cooperation with the brick manufacturers.

The cost of tug service, like that of everything else, has gone up considerably within the last ten years, due to the higher wages paid to tughands and pilots and greater fuel costs. It costs about $195 for tug service from Newburgh to New York today.

Several Up-to-Date Plants

It would seem that a good start had been made on the task of modernizing Hudson River brick manufacturing methods. There are now several plants thoroly up-to-date in every respect. Many of the Hudson River brick men have their noses too close to the grindstone to notice the changes that are coming over their district. Scarcity of labor and foreign competition appear to be hard nuts to crack for the time being. Perhaps in later years they may be looked back to as somewhat of blessings in disguise that forced the Hudson River brick industry out of ways that have become obsolete, and that ushered in a new era of prosperity,—based no longer solely on the district's wealth of clay and its geographical advantages, but on the most efficient manufacturing methods, born in the hour of stress and deepest uncertainty as to the future.

* * *

CONSTRUCTION TOTALS DROP 3 PER CENT.

The decline in construction volume which began in June continued thru September, according to F. W. Dodge Corporation. However, the September drop from August was only three per cent. Total September building contracts in the 36 Eastern States (including about seven-eighths of the total construction volume of the country) amounted to $288,931,700. In the 27 states for which records were kept last year the drop from September, 1922, was seven per cent. In these 27 states construction during the first nine months of this year has been just equal to the amount for the corresponding period of last year, altho on June 1 this year had a lead of 15 per cent. over last year.

This year's construction volume to date in the 36 Eastern States has amounted to $3,012,610,500.

Last month's record for the 36 states included the following important items: $111,906,000, or 39 per cent., for residential buildings; $55,010,800, or 19 per cent., for public works and utilities; $44,141,700, or 15 per cent., for business buildings; $38,059,300, or 13 per cent., for industrial buildings, and $16,399,000, or five per cent., for educational buildings.

Contemplated new work reported in the 36 states last month amounted to $387,922,300, a decline of 25 per cent. from the amount reported in August.

* * *

COAL PRODUCTION TOTALS HIGH

Production of bituminous coal continues at high levels despite the fact that demand has fallen off considerably. Following prices are from the Coal Trade Journal and are the latest available:

	Mine Run	Prepared Sizes	Screenings	Slack
Pennsylvania:				
Pittsburgh district	2.00-2.25	2.75-2.90	....	1.00-1.10
Pittsburgh gas...	2.25-2.50	2.85-3.00	....	1.25-1.50
Central Pennsylvania (low vols.)				
South Fork	2.90-3.15	....	....	....
Miller Vein	2.40-2.60	....	....	....
Good Clearfield ..	2.15-2.35	....	....	....
Ordinary Clearfield	1.60-1.90	....	....	....
Connellsville Dist.:	1.45-1.50	2.00-2.25	....	1.15-1.25
West Virginia:				
Smokeless	2.75-3.00	....	....	2.00-2.75
Kanawha and Logan	1.50-2.00	2.25-3.50	.90-1.25	....
Fairmont	1.50-2.00	1.90-2.75	....	1.15-1.35
Ohio:				
Pittsburgh No. 8.	2.00-2.35	2.50-2.75	....	1.25-1.55
Hocking	1.75-2.00	2:75-3.25	1.00-1.25	....
Pomeroy	1.85-2.10	3.00-3.25	....	1.00-1.15
Kentucky:				
Southeastern	2.00-2.50	2.75-4.00	....	1.00-1.25
Northeastern	1.75-2.25	2.50-4.00	....	.85-1.25
Western Kentucky	1.75-2.15	2.25-3.25	.70-1.10	....
Illinois:				
Southern Illinois.	2.25-3.00	3.50-4.35	1.00-1.35	....
Central Illinois...	2.00-2.25	2.50-3.25	.90-1.10	....
Northern Illinois.	....	4.25	....	....
Indiana:				
Fourth Vein	2.25-2.60	2.75-3.25	.90-1.40	....
Fifth Vein	1.75-2.40	2.25-2.75	.75-1.25	....

* * *

RENTS INCREASE DESPITE BUILDING

It is found by the National Industrial Conference Board that there was an average increase in rents of three per cent. between March and July this year. It was significant, however, that rent inflation seems to have subsided somewhat in the larger eastern cities, such as Boston, Buffalo, New York, Baltimore, Philadelphia and Pittsburgh, all of which report either no changes or a very small increase. Washington had an increase in this period of between 11 and 20 per cent. In the middle west, 25 cities reported higher rents, while landlords were reducing their bills in six only; in the remainder of the 59 cities reporting in this section no change had occured.

However, rent increases which averaged 100 per cent. or more since 1914 were in effect in 32 cities. Chicago has been added to this group since last March, and Detroit, Los Angeles and Milwaukee also report doubled rents.

French Lick Springs Hotel at French Lick, Ind. A Fine View of the Beautiful Grounds Surrounding the Hotel.

Back to French Lick Springs

American Face Brick Association to Hold 1923 Convention in Favorite Indiana Resort —Will Have Big Story of Progress to Tell

AFTER TWO YEARS of absence, the American Face Brick Association will return to its old haunt for its annual convention in 1923. The French Lick Springs Hotel at French Lick, Ind., where the demon Pluto reigns, has been chosen as the headquarters for the face brick men in their annual meeting to be held December 4, 5 and 6.

Since the meeting held at West Baden last year, the American Face Brick Association has embarked on a number of new and important objectives. The meeting will bring up to date all of these activities thru reports by the officers and chairmen of committees, and special addresses. There are many important features to be considered at this meeting, but all matters will be boiled down and concise reports made.

Three Sessions to Be Held

The program will be limited to three sessions. One session will be held each day and as usual will be short and to the point.

One of the features of the meeting will be the submission to the meeting of an "ideal" form of sales representation contract between dealers and manufacturers. Owing to many misunderstandings and controversies that have occurred in the past between manufacturer and dealer as to the exact understanding between them, committees from the American Face Brick Association and from the Face Brick Dealers' Association of America recently met and drew up an outline for an "ideal" contract form to govern relations between dealers and manufacturers.

Why Not Pay Us a Visit?

Brick and Clay Record extends herewith a cordial invitation to all manufacturers planning to attend the face brick convention, to visit us. Why not stop off in Chicago on your way to French Lick? Brick and Clay Record's office facilities will be placed at your disposal. We would be glad to have you use our telephone and stenographic help. You can leave Chicago on the Monon Railroad at 9 p. m., board a sleeper and arrive in French Lick at a convenient hour in the morning.

The committee is now working on the details of this contract. It is expected that each association will submit the form to their membership for endorsement at the forthcoming meeting.

It is the idea of the joint committees to suggest the "ideal" form of contract as an entirely voluntary and optional matter for the dealer or manufacturer to use, which will be merely an outline that will call to the attention of manufacturers and dealers every matter that should be considered before entering into a contract, thereby making it possible to avoid future misunderstandings.

Many Things to Be Discussed

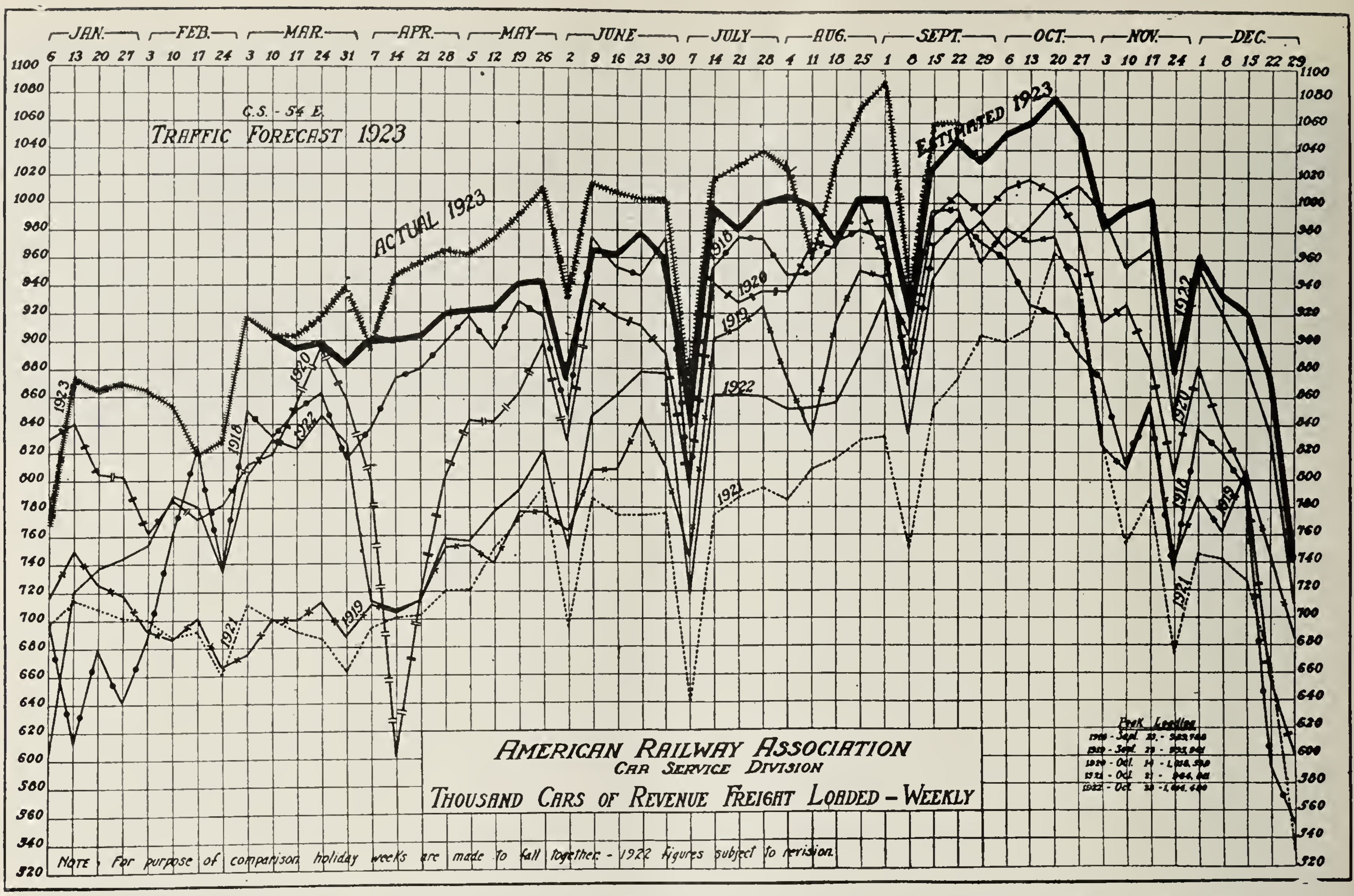
Other matters of equal importance will come before the attention of the delegates. It is too early, however, to discuss all of the important features that will come to the attention of those present at the meeting.

The year 1922 showed a great increase in production of face brick over any previous year and 40 per cent. greater than 1916, the year of best previous production. It it reported that 1923 production will even likely exceed 1922. This creates a feeling of optimism on the part of manufacturers in the face brick industry. Moreover, it clearly indicates what can be done by well directed cooperative effort. All indications point to a larger and more enthusiastic meeting than usual. Most of the delegates welcome the return to French Lick, the scene of so many successful meetings in the past.

* * *

C. C. B. M. A. APPOINTS ENGINEER

Robert W. Tempest has been elected to the position of engineer for the California Common Brick Manufacturers' Association by the board of directors of that organization. Mr. Tempest is a graduate engineer of wide experience, thoroly familiar with building operations in California. He will devote his entire time to the promotion of brick interests and he will work with architects and engineers in an advisory capacity.



This Chart Shows the Estimated Car Loadings for 1923 (Heavy Black Line) in Comparison with the Actual Loadings (Ruled Line)

CAR LOADINGS REMAIN AT HIGH LEVELS

Freight loadings are considered a criterion of business conditions and it is therefore pleasing to see from the chart here published that weekly freight loadings for 1923 are at higher levels than have ever before been recorded. The chart shows how far the estimated loadings, which were considered optimistic figures, have fallen below the actual freight loadings recorded. Totals for the present are remaining at their high levels and showing no indications of declining. For the weeks ending September 15 and 22, a total of over 1,060,000 cars loaded were recorded.

* * *

INCOME OF RAILROADS

The net operating income of the Class One railroads for the first eight months this year represented an annual rate of return of 5.40 per cent. on their tentative valuation, amounting in dollars to $625,634,900, compared with $466,447,100, or 4.11 per cent., for the same period in 1922. This was an increase of $159,187,800 over the first eight months last year. In the Eastern district for the first eight months the rate of return was 6.18 per cent., or $339,944,600; the Southern district, 6.34 per cent., or $86,577,800, and the Western district, 4.23 per cent., or $199,112,400.—Railroad Data.

* * *

BUYERS ENTERING REFRACTORY MARKET

Greater interest is evidenced in refractories to the extent of ordering small lots and more inquiries are out for that commodity than has been the case in many weeks, according to Iron Trade Review. Order books of several manufacturers signify that more brick orders have been placed recently than for the last two months and inquiries have been more numerous. Buying has to be done due to the fact that inventory stocks are becoming depleted. Much encouragement is felt by sellers over the outlook for good business this fall. The iron and steel industry's contributions to the new orders are of small proportions so far, altho several owners in those lines are taking advantage of the present lull to make needed repairs to the linings of open hearth, Bessemer, heating and other furnaces, as well as soaking pits, and so forth. Following prices are the latest obtainable:

Fire Clay Brick (Per 1000 f.o.b. works)			
Pennsylvania, No. 1	$45.00	to	$48.00
Pennsylvania, No. 2	43.00	to	46.00
Ohio, No. 1	45.00	to	47.00
Ohio, No. 2	40.00	to	43.00
Illinois, No. 1	48.00	to	50.00
Illinois, No. 2	45.00	to	47.00
Kentucky, No. 1	45.00	to	47.00
Kentucky No. 2	40.00	to	42.00
Missouri, No. 1	43.00	to	45.00
Missouri, high grade	48.00	to	53.00
Maryland, No. 1	48.00	to	51.00
Maryland, No. 2	42.00	to	45.00
Silica Brick			
Pennsylvania	42.00	to	45.00
Chicago	52.00	to	54.00
Birmingham			53.00

Orders for fire clay usually run from 50,000 to 200,000 brick at a time, altho the Duquesne Light Co. recently closed on about 750,000 brick for Colfax, Pa. boiler settings.

Holding firmly to the $45 price, large producers of silica brick have lost some business of late to price cutters. Typical orders thus lost involve 90,000 to 300,000 brick.

* * *

WHY BUSINESS WILL STAY GOOD

Here are ten reasons why leading business men of the nation expect good business to continue in 1924:

1. Pig iron production for 1923 is at a high point and the steel interests are working at 90 per cent. capacity.

2. Oil production for 1923 is exceeding all previous records, and oil consumption is likewise increasing at a rapid rate.

3. 1923 will record the highest figures of any year in his-

tory for the production of automobiles and trucks.

4. More residences have been constructed in 1923 than in any previous year.

5. The production of locomotives and railroad equipment for 1923 is greater than ever before witnessed.

6. Railroad car loadings for 1923 are above all previous records, now exceeding the unbelievable figure of a million cars a week.

7. Sales of retail stores will exceed in volume in 1923 all previous years and mail order sales are rapidly expanding.

8. The savings deposits and the national bank deposits will stand at a record figure for 1923, when compared with any previous year.

9. Wages are nearly back to the peak of war-time schedules, which means a greatly increased purchasing power for the masses.

10. The population of our country is continually increasing, the wealth and income is constantly piling up, and practically all surface indications are for continued good business.

* * *

SPEND $1,300,000 FOR BRICK DWELLINGS

Gains in brick construction, as far as residence accommodation is concerned, in the Cleveland, Ohio, district, seldom has been better illustrated than in the figures just submitted for this year's activity so far. Of the total cost of residence and apartment work that has been undertaken this year in the immediate Cleveland district, this representing a trifle better than $23,000,000, more than $1,300,000 has been spent on brick construction. The number of buildings actually undertaken is 2,582, providing accommodations for 4,667 families, the whole showing a gain of 37 per cent. over last year.

* * *

Hollow Tile Association Does Valuable Engineering Work

WHILE ENGAGED in conversation with Frank J. Huse, engineer of the Hollow Building Tile Association recently, the writer was impressed with the importance and the possibilities of the work which the Engineering Service Bureau of the Hollow Building Tile Association is doing. In a quiet, unassuming way, this bureau under the direction of Mr. Huse, is doing remarkable work which cannot fail to have a far-reaching influence for the betterment of the hollow tile industry. The work deserves commendation and the whole-hearted support of every manufacturer of hollow tile.

What, for the present, is probably the most important activity of this bureau is its effort to obtain information upon which can be established definite standards for weights and sizes of all grades of hollow tile. An immense amount of data has already been gathered and tabulated and the work is rapidly nearing completion. This information will form the basis upon which standard weights and sizes will be worked out. On October 19 a committee of the Hollow Building Tile Association armed with the figures gathered by the Engineering Service Bureau will meet with the Department of Commerce, Division of Simplified Practice, in Washington, to determine standard weights and sizes.

Making Tests on Panels

In addition to this work of simplification and standardization the Hollow Building Tile Association has in progress, at the Bureau of Standards, three large programs which comprise tests on hollow tile panels and floors. Fire resistance tests are being conducted on 39 panels of tile 11x15 feet built up of different sizes and different types of tile. These tile are manufactured from various grades of shale and clay.

Fifty hollow tile panels 6x9 feet will be built up for the purpose of determining the strength of these tile under load. It is expected to get much valuable and authoritative information from these compression tests.

The third program will entail the building of 44 test specimens of combination hollow tile and concrete floor. The purpose of these tests will be to ascertain just how much the hollow tile helps the concrete in such floors and what its real value is. At present there is no authoritative data on this subject and builders can only guess or estimate in what degree hollow tile in this construction is valuable.

Hope to Get Real Information

When these tests have been completed there will be available some real information which will be of the greatest value to engineers and architects, in their work of designing buildings in which hollow tile is to be used. The tests will go far toward clearing up the mysteries which now surround the use of hollow tile as well as the pet theories and schemes of architects and engineers.

Other work of the utmost importance which is being started by the clay products industry, in which the Hollow Building Tile Association will participate is the gathering of information which will ultimately lead to the classification of clays. There are probably more than 250 manufacturers of hollow tile in the country and to all intents and purposes there are as many different types of clay or shale as there are manufacturers. What the association aims to do is to classify these clays so that instead of the 250 more or less different types of products now produced there will probably be 12 or 15 which can be used as the standard of comparison. When this work is completed test data will have infinitely more value than it now has because every manufacturer will have some class with which he can compare his own product.

Maintains Two Fellowships

Other important functions of the Engineering Service Bureau is to work with city engineers in planning new building codes and changing existing codes to permit the use of hollow tile in all kinds of construction. Following these lines the bureau also works with architects and contractors to see that hollow tile is properly used to its best advantage consistent with good construction and economy. Mr. Huse is now working on a new hand-book or manual of hollow tile construction which will be a revision of the old book and will contain the latest improved ideas in hollow tile construction. Allied with this work is that of the field men which the association has in various territories. These men visit architects and engineers and consult with them about the use of tile in construction. It has been found that this service is appreciated.

One thing that is not generally known is that the Hollow Building Tile Association maintains two fellowships at the Bureau of Standards and these two men put in their full time on hollow tile work. The work of these two men is also under the direction of Mr. Huse.

In addition to those recounted above there are innumerable other functions which the Hollow Tile Association's Engineering Service Bureau performs but which cannot be recounted here for lack of space.

Foreign Brick and the Hudson River

A Complete Review of the Foreign Brick Situation in New York and an Idea of What the Hudson River Manufacturer Can Expect from Foreign and Synthetic Products Competitors

Allen E. Beals

Secretary, The Dow Service, New York City

Editor's Note.—In answer to a number of questions put to him, Allen E. Beals of the Dow Service, New York City, has given a complete picture of the situation in New York with regard to the use of foreign brick and synthetic products. These questions were put to Mr. Beals by the Common Brick Manufacturers' Association and are a part of an investigation conducted by that association into the foreign and synthetic brick situation.

WHAT IS THE NAME of the party or parties financing the importing of brick?

H. P. C. Keuls Co., 8-10 Bridge St., New York City (Holland brick); Potter Importing Co., 17 Battery Place, (sand-lime, Belgian); Seaboard Importing Co., 101 Park Ave., (German face); Metropolitan Materials Co., 130 W. 42nd St., (sand, lime and common Belgian and German); John R. Joy, 150 Nassau St., (Belgian); Ulrich Thompson Jr., 120 Broadway (German). There are a number of other firms who plan to import brick in large quantities, but who have not yet reported cargoes arriving.

Types of Synthetic Brick

Other types of brick being introduced in the market are sand-lime brick, which is beginning to make itself felt in New York city. These inroads upon the domestic common brick market have been particularly noticeable within the last nine to fifteen months, particularly so within the last half year. Sand-lime brick plants at Elizabeth have their present plant capacity sold out to February, and they are at the present time installing a much larger machine capacity in order to take care of the demand. The chief market for European sand-lime brick is to fill the demand that cannot be met in this market by sand-lime manufacturers at the present time.

A large firm will probably announce its incorporation, and the erection of the biggest sand-lime brick manufacturing unit within a few months. There are negotiations for vast sand supply on the Hudson River. The tremendous potash plant on the Raritan River in New Brunswick is being negotiated for by sand-lime brick manufacturers with the purpose in view of turning this great structure to the manufacturing of this kind of building material.

Cement Brick Plant at Capacity

The Brooklyn Crozite Brick Co. has been making a cement brick, and this company reports the demand so large that it has had difficulty in keeping dealers away from green brick curing in the yards. This plant is manufacturing a cement building tile which is receiving considerable attention as a substitute for common brick in Brooklyn.

A Mr. Lyon, Rm. 912, 1475 Broadway, is developing, thru the assistance of large downtown financial interests, the negotiations for the sale of a large property in Sullivan County, where he plans to produce a composite brick.

The Millard Brick Co. at Farmingdale, L. I., and Altex Face Brick Co., also in Long Island, and the Superior Brick Co. at Riverdale, L. I., are all erecting plants for the manufacturing of composite brick for New York City.

350,000,000 Foreign Brick Imported

What are the names of any dealers who are handling these brick?

Various dealers are handling these brick, namely Callan Bros., Bklyn., F. D. Creamer, Bklyn, McIlvain & Smith, Manhattan, John A. McCarty, Bronx. There are doubtless many other dealers selling these substitutes for common brick because there have been arrivals from foreign ports of European brick of various kinds in excess of 150,000,000 up to April 1, 1923. Since then, H. P. C. Keuls, alone, has purchased 200,000,000 American size brick for which he took over American size molds, and other firms have made arrangements for the shipment to this country of brick, which, according to their reports, will exceed totals above quoted.

Bricklayers Do Not Like the Size

What, if anything, do you hear about the reaction of the bricklayers and the contractors who have used the foreign brick?

According to information given to me by a number of members of the Mason Contractors' Association of the Building Trades Employers' Association in New York City, the American bricklayer is rather passive in his attitude regarding foreign brick as against American brick, altho if he has any preference, it is toward the American brick. The majority of foreign brick so far having been sent in is of larger size and heavier. The bricklayer has always been accustomed to handling the standard size American brick, and he is not taking kindly to this innovation in sizes. If foreign brick manufacturers will send in American size brick, the last remaining objection of the bricklayer will be that the texture of the foreign brick is such as to make their handling harder on their hands. Regarding the latter complaint, I am not inclined to take much stock in it.

Foreign Brick Color Not So Good

The contractors who have used the foreign brick object to the coloring of them as not coming up to American standard, and they have difficulty with the owner who is not always entirely pleased with the finished job, unless in advance, he has discounted appearance for the sake of price. The dealers are just a little hesitant about encouraging the use of foreign brick. They realize that in emergency, it will probably be the means of getting cheaper brick for their customers, but when the pressure of brick supply subsides, the American dealer will be forced once more to do business with the American manufacturer, and he is cautious about lightly throwing aside the long years of personal acquaintance and trade relationships that he has enjoyed with a pleasant benefit. It is my personal observation that the New York dealer who uses foreign brick from choice, rather hesitates to place himself in the same category as the lumber wholesaler who sells direct to the contractor. While the analogy is not entirely complete, yet the similarity is close enough to probably convey the idea that I wish to carry.

Shippers, Not Brick Dealers, Do Importing

You must remember in the above connection, that when a certain investigation was in progress, the chief inquisitor made a great statement to the newspapers to the effect that the way to break the so-called brick manufacturing combination was to go to Europe for brick.

Since that time, this instigator of the foreign brick idea has been to Europe and has sent over demonstration cargoes in sufficient volume to stir up a number of importing houses, who know more about shipping than they do about building material marketing and construction requirements, or building material products. The result is that these importing firms are going to great excesses in shipping these brick over here, and in most cases, they have been confronted with the necessity of being their own sales promoters.

Architects Prefer Hudson Brick

The architects are wary about the quality of the brick and prefer to specify the standard Hudson Hard Brick in New York City, but where they are assailed by their clients for lower building construction costs, they will specify foreign brick. I am sorry to say that the tendency to specify these foreign brick in the period from June 1 to the middle of August has been on the increase, particularly in the boroughs of Bronx, Brooklyn, and Queens.

If these importers will send American size brick over and are able to handle it either in buckets or tarpaulins, so the spalling, the breaking, and the chipping of edges can be eliminated, the market for these brick will be greatly increased.

The writer has estimated that building construction in New York City next year will probably reach $600,000,000. This will be approximately $60,000,000 more than New York City construction, based upon permits filed on the August average for eight months in 1923.

Expects $6,000,000,000 Construction Year

Building construction requirement for 1924 probably will be greater than ever before recorded. The rate of basic building material consumption has increased since 1916 as follows:

1916	$1,750,000,000	1920	$2,225,000,000
1917	1,300,000,000	1921	2,890,000,000
1918	1,090,000,000	1922	3,115,000,000
1919	1,187,000,000	1923 (esti.)	3,445,000,000

Building material requirements in 1924-25, due to the requirement for the reconstruction of Japan, plus the national requirements for the United States, based upon $5,230,000,000, probable construction total for 1923, would easily enable building construction to reach a grand total for 1924 of approximately $6,000,000,000.

Be Ready for Demand

It is not clear in my mind, just why manufacturers should feel nervous over the importing situation, as far as American brick is concerned. The limitation, if any, in the use of American domestic brick will be due to the lack of bricklayers to lay it, a fact which applies equally to foreign brick, as well as to domestic synthetic brick. The main problem in the matter of all kinds of basic building material next year will be to get it to market fast enough so as not to delay construction. For that reason, the most farsighted building material manufacturers today are making arrangements for increased output next year. I cite particularly steel, cement, lime and plaster, electrical equipment, and paints. Let the American manufacturer realize thoroly that the consumer's preference, aside from a wide difference in price, is always on the side of domestic building materials. If the manufacturer fails in keeping up his supply, the consumer has only one alternative, and that is to take the best substitute material that is at hand.

* * *

CARY IS HOST TO 65 BRICK MEN

A big meeting of common brick interests was held October 4 at Newton Hook, N. Y., where William Cary, president of the Cary Brick Co., was host to 65 members of the industry from the New England and Hudson River territory and others. The feature of the gathering was the serving of a genuine "Way Down East" clam bake on the grounds of the Cary plant. While this was enjoyed by everybody, it was particularly interesting to those who had never partaken of such a feast.

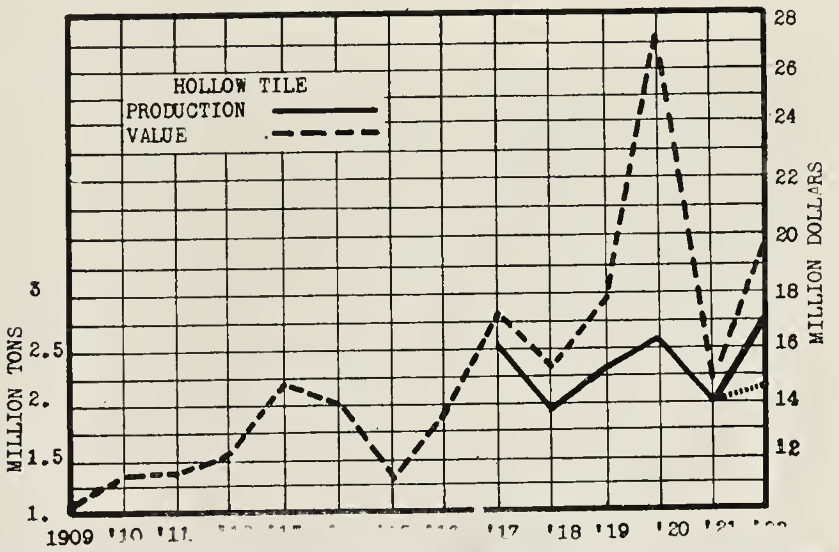
Special guests of the occasion invited by Mr. Cary were Charles Bryan of Mercier, Bryan, Larkins, Detroit; William Schlake, Chicago, president of the Illinois Brick Co.; Dr. J. M. Purcell, of the Duffney Brick Co., Mechanicsville; W. K. Hammond, of New York; Charles A. Bowen, assistant to the president, Common Brick Manufacturers' Association, and Ralph P. Stoddard, secretary of the Common Brick Manufacturers' Association.

Tho the event was primarily a social gathering, one important phase of business was touched upon by the speakers, this being the question of imported brick, millions of which are said to have been landed at the port of New York. This matter will receive more consideration later.

* * *

CORRECT 1922 HOLLOW TILE PRODUCTION

Figures on the production of hollow tile in 1922 as published in the September 18 issue of Brick and Clay Record were in error. Due to an oversight in compiling the production figures, the amount of tile reported as unclassified was omitted from the production figure. This made a difference of almost 700,000 tons. A correct production curve is printed here and shows hollow tile to have made a gain of over 40 per cent. over the previous year. The short barred line on the production curve shows the curve as it was originally printed in the September 18 issue. The correct production figures should have been 2,869,395 tons instead of 2,176,366 which was reported; the correct price per ton should have been $6.86 instead of as reported.



Correct Curve of Hollow Tile Production and Value for 1922. Read Production Curve from Figures at Left—Value Curve from Figures at the Right.

* * *

TO BUILD ANOTHER KILN

An additional kiln is to be installed this fall at the brick plant of J. P. Cooper and William F. Cooper, at Hollow Rock, Tenn., it was recently announced by the latter.

How Good Silica Brick Are Made

The First of a Series of Articles Which Will Cover the Subject of Silica Brick Manufacture from Beginning to End—This Article Covers Principally the Preparation of Raw Materials

E. E. Ayars

Chairman, Refractories Division,—American Ceramic Society

SILICA BRICK are indispensable in the metallurgical industries. Altho in many cases they are not as desirable from a metallurgical standpoint as another refractory substance would be, the fact that they exhibit unusual strength at high temperatures accounts for their wide use. The life of silica refractories is dependent upon, First: the character and quality of raw materials used; Second: the workmanship developed in their manufacture; Third: the class of service to which they are to be put, and, Fourth: the care and intelligence exercised by the furnace operator in handling his refractories.

Composition of Silica Brick

High grade silica brick are made of quartzite or ganister rock obtained in several localities in the United States. Fully half of the tonnage used comes from Pennsylvania, while Wisconsin contributes about one-fifth of the total and most of the balance is secured in Alabama, Colorado, Utah and Montana. Quartzite is a hard metamorphosed sandstone containing usually about 97 per cent. pure silica and two to three per cent. of such impurities as iron oxide, and alumina with traces of lime, magnesia and the alkalies. There are certain true sandstones which, from the standpoint of chemical analysis, would appear to be suitable for the manufacture of silica brick but whose physical properties are such as to render them unfit for this use. Rock which breaks up easily into round sand particles will not produce the strong brick required. Quartzite, being hard metamorphosed sandstone breaks up into splintery, angular fragments which knit together during the burning process producing a strong brick.

This Gives an Excellent Idea of the Appearance of a Quartzite Quarry Face. The Car on the Track in the Lower Center Offers a Good Comparison to Estimate the Height of the Face.

Man Size Rock Storage, Showing Raw Material Ready to Be Fed to the Crushers.

Ledge Rock or Floe Rock Better?

There has been some controversy about ledge rock on the one hand and floe rock on the other as to whether one was not better suited for brickmaking than the other. The assertion is made that floe rock, being weathered, makes a better brick than ganister taken from a solid measure. The only thing that weathering can possibly accomplish in the case of quartzite is to remove some of the iron and soluble alkalies, which if present in large quantities render the rock unsuitable for the manufacture of brick. It is true that weathered rock is not quite as hard on the grinding machinery but the difference is so small as to be hardly noticeable. It is also true that the actual reduction of the floe rock in the quarry by dynamite and hammer is more difficult than the reduction of similar pieces of ledge rock, as floe rock absorbs shock more readily than the brittle stone from the solid measure.

Types of Quartzite Rock

Quartzite containing a large percentage of impurities can be found both in talus slopes or solid measure and may be sometimes declared unfit for brickmaking simply by casual inspection. For instance, stone high in alumina may be identified by at least two characteristic structures. The first, a sort of schistose quartzite, is rather soft, often found with slates and containing only occasional lenses of true quartzite. The second, a poorly metamorphosed stone, with large sand or quartzite grains plainly visible and containing numerous white areas of pure alumina. These white patches have the feel of soapstone and are distributed thoroly thruout the mass.

It is probable that the theory of floe rock making a better brick originated in a sales talk intended to damage a competitor and it is certain that no data has been produced to prove the assertion. The word "weathering" as applied to clays means certain things which do not obtain in the case of refractory ores.

Amount of Impurities Permissible

It is sufficient to say that silica brick of good quality may be made from either floe or ledge rock or a mixture of the two. The essential features to be noted are that the rock shall contain not more than three per cent. of impurities, and it must be a hard, well metamorphosed stone breaking into angular fragments when ground.

Typical analyses of quartzites from the Medina formation of Pennsylvania and the Baraboo deposits of Wisconsin show the following constituents:

	Medina	Baraboo
Silica	97.80	97.10
Alumina	1.32	1.68
Ferric Oxide	.90	.74
Magnesia	.20	.38
Lime	.03	.07

Very few silica brick plants are located at the site of the quartzite quarry and the rock is shipped from a few miles in some cases to as many as 250 or 300 miles in others. An occasional plant is receiving crushed rock from the quarry but the usual plan of operation is to ship man size rock to the plant and the crushing is done there. Storage must be provided for large quantities of both crushed and uncrushed rock. Steel bins are provided for the crushed rock, while the man size rock is usually stored in pockets beneath the unloading track where it is easily accessible for crushing.

Storing Crushed Rock

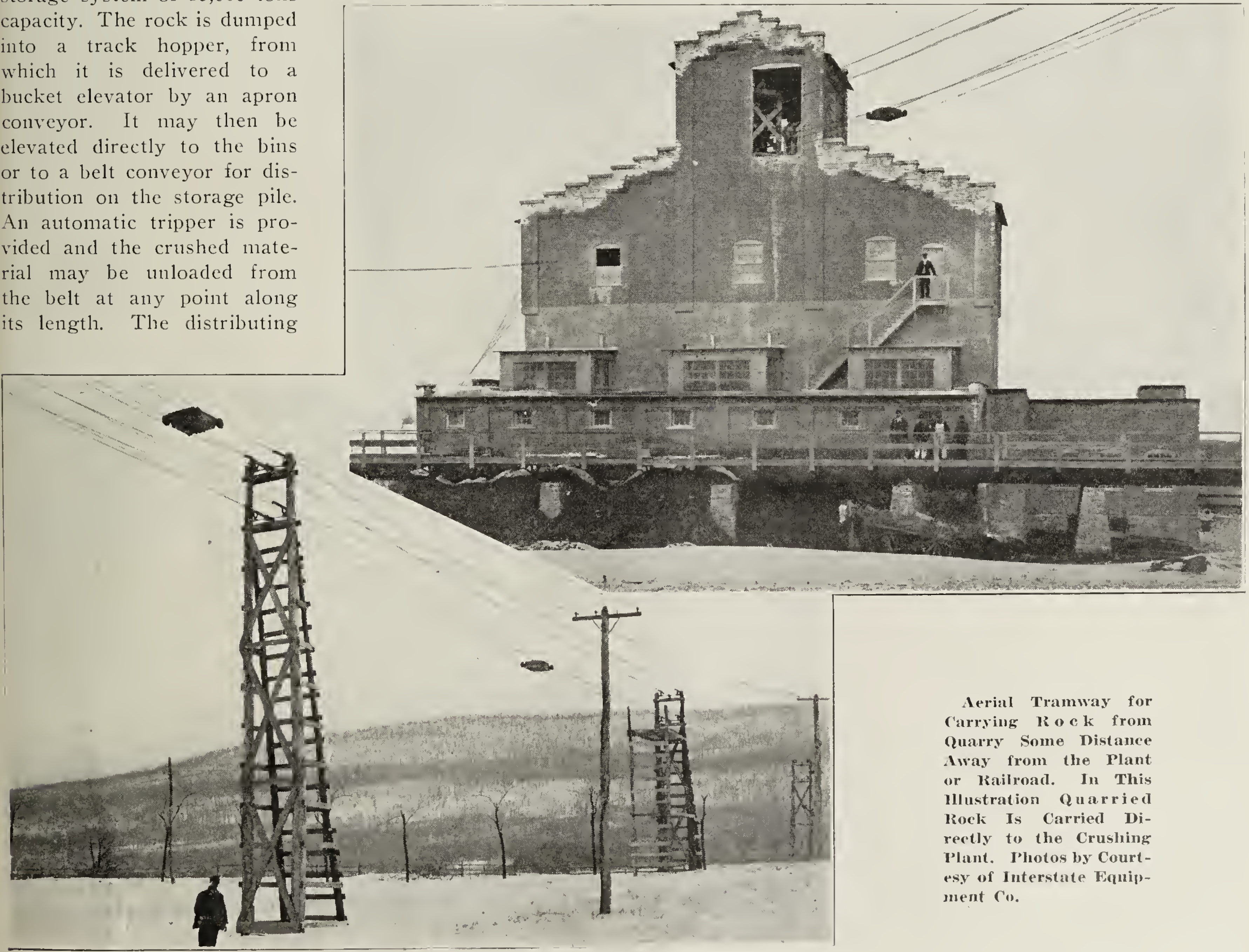
One plant receiving crushed rock from the quarry has a storage system of 15,000 tons capacity. The rock is dumped into a track hopper, from which it is delivered to a bucket elevator by an apron conveyor. It may then be elevated directly to the bins or to a belt conveyor for distribution on the storage pile. An automatic tripper is provided and the crushed material may be unloaded from the belt at any point along its length. The distributing conveyor is about 45 feet above the ground. One objectionable feature of this method of handling is that in windy weather a large part of this very fine material is carried clear of the storage pile and lost.

Directly under the storage pile a reclaiming conveyor is placed. It is housed in a concrete tunnel provided with hopper openings at intervals. This belt conveys the material back to the track hopper, from which it is delivered to the bins by the apron feeder and bucket elevator.

Advantage of Storage

The chief advantage of this storage system lies in the possibility of eliminating winter quarrying and crushing and their attendant difficulties. However, the location of the crushing plant at the quarry and the use of this storage system has little else to recommend it. The investment is high and the additional overhead is a great burden on the brickmaking cost. Separate power plants are necessary, as well as additional superintendence, and the mechanical repairs and upkeep involved add materially to the difficulties of operation.

One eastern manufacturer whose plant is situated within a mile of the quarry has a crushing plant located at the quarry. The crushed material is delivered to the bins at the plant by an aerial tramway or cable Railway system. This is a unique installation and has proven very satisfactory. Tram cars of approximately 500 pounds capacity, equipped with four double flanged wheels, run on two suspended parallel wire ropes. There are two sets of ropes, the load track ropes being directly above the return set, and both are supported at intervals by towers of simple construction. The cars are automatically loaded at the crusher as they pass under a hopper holding one tram car load, the hopper being filled each time from the large storage bins fitted with a manually



Aerial Tramway for Carrying Rock from Quarry Some Distance Away from the Plant or Railroad. In This Illustration Quarried Rock Is Carried Directly to the Crushing Plant. Photos by Courtesy of Interstate Equipment Co.

operated undercut gate. On arriving at the plant terminal the car runs off from the cables onto fixed rails so curved as to reverse the car by dropping the forward end and turning it back toward the loading point upside down. As the car turns over the material drops into the bin. Gravity plays some part in the operation of this tramway, but to insure steady movement of material a small electric motor is used, the endless hauling cable being clipped to each car and held up by idler sheaves at each tower.

Lack of Storage Space May Shut Plant

There is a possibility of having to shut down the plant for want of raw material should any serious accident happen to the cable way, altho the storage bins are of large capacity and will usually hold enough to tide the works over any crusher repairs or power difficulties. The margin allowed for continuous operation, however, appears to be too small, as weather conditions might easily shut the quarry down, which in turn would affect the plant, unless some outside storage is provided at the works to meet such conditions.

On the average plant bin storage for several hundred tons of raw material is provided which may represent anywhere from two days to a week's supply of rock. Crusher and elevator repairs consume considerable time and it is desirable to have sufficient bin capacity to carry thru such periods which come with more or less regularity.

Crushers in Common Use

The crusher in common use on most silica brick plants is the Champion 5X swinging jaw type. The capacity of this machine varies according to the size of the feed and size of product required. With a feed averaging not larger than eight to ten inch rock, the hourly capacity in product to pass a two inch ring is approximately 15 tons.

A 50 horsepower motor is usually provided to operate this crusher and the necessary bucket elevator to the bins. One of the principal reasons for the almost universal selection of this crusher lies in the fact that a larger feed, in comparison to the capacity of the machine, may be used than with any other type.

A few gyratory type crushers are in use. One eastern plant installed such a crusher, but so little head room was available for repairs that it was abandoned as a rock crusher and is used only occasionally to crush bats.

Gyratory Crusher Good

Still another plant has a very satisfactory installation, consisting of a number seven Austin gyratory driven by a 75 horse power motor. The largest man size rock may be fed and the product secured is 2½ or 3 inches down to dust. The hourly capacity of this machine is from 50 to 55 tons.

A set of 24x54 inch Anaconda rolls driven by a 100 horse power motor is used in conjunction with the crusher. These rolls reduce the rock to an average of two inches, but are not as satisfactory as it was believed they would be when installed. The entire product of the crusher is run thru the rolls. A grizzly separation would be desirable and it is probable that the rolls would be much more efficient if the feed was confined to the two and three inch material. The fact is that rolls are not satisfactory for the reduction of quartzite and the cost for power and repairs is out of proportion to the results accomplished.

There is no doubt of the superiority of the gyratory over the swinging jaw type of crusher for the breaking of quartzite. It is more easily kept in operating condition, being made up of solid castings. The jaw crusher is made up of small castings and side plates bolted together and readily wears out of balance due to excessive vibration. The cost of power and attendance shows much in favor of the gyratory, altho the cost of repairs is about the same in either case. The product of the jaw crusher is splintery and there is constant danger to the operator from flying particles of rock. A cubical product is obtained from the gyratory breaker and the hazard from flying pieces is very slight.

From an operating standpoint the gyratory is a dependable machine, requiring little attention, while the swinging jaw crusher is a constant source of annoyance, liable to break the thread of operation at any time for extensive repairs.

Crushed Rock Storage and Overhead Distributing Conveyor. In This Installation the Reclaiming Conveyor Is Located in a Concrete Tunnel Under a Storage Pile.

The additional first cost of the gyratory over the swinging jaw type is easily justified in view of the operating advantages obtained.

Save Grinding Machines

The finer the raw material is crushed the less grinding is required in the pans. The average maximum size of material fed to pans is about two inches. The larger the material the longer the grinding time and the greater the wear and tear on the wet pans. The reverse is also true. The grinding cost and the wear on the machines is greatly reduced by feeding small sizes and the grinding time can be cut to the point where the work necessary practically amounts only to that required for tempering the mixture.

Some rough tests were run to determine the grinding time of certain small sizes of rock. The only wet pan available was the heavy muller pan employed to grind the customary two inch material and really too heavy for small sizes. The time required to grind and temper a pan full of three-eighths ground ganister did not exceed five minutes, while three-fourths inch and one inch stone were tempered in from seven to ten minutes.

Heavy Wet Pan Not Necessary

The brick mixtures produced showed a screen analysis almost identical with that of the standard grind from larger rock, and the green brick modulus of rupture compared favorably with the regular product in every case.

It would appear from this rough test that a somewhat lighter wet pan could be employed to advantage and the size of the rock fed reduced to a maximum of one-half inch, thus reducing the grinding time and cost of pan repairs without affecting the quality of the product.

Some experiments have been made to determine the feasibility of dry pan or mill grinding and subsequent tempering in a cement mixer. Screen analysis of the material used showed it to be only a fair approximation of the standard wet pan grind. The texture of the charge was different than that developed in wet pan grinding and a rough appearing brick was produced. The effective modulus of rupture was about 200 pounds lower than the average brick of standard manufacture. It is not improbable that brick, suitable for many purposes, could be produced in this manner more cheaply than by the present wet grinding method, altho the problem of a proper screen analysis might present some difficulties.

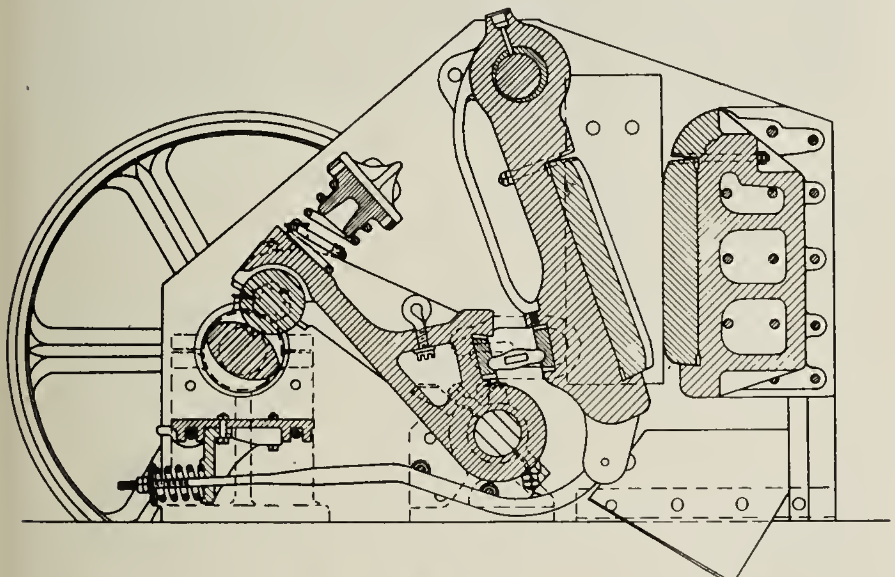
Wet Pan Grinding Has Advantages

Wet pan grinding produces a certain desirable texture and temper in silica mud which it is impossible to get by any other means, but, even variations in wet pan grinding affect workmanship, strength and appearance of the brick to a marked degree.

Grinding has a decided effect on the quality of brick produced and is believed to be responsible for a certain amount of breakage. Numerous attempts have been made in this country to standardize grinding but the task requires considerable specialized effort and continual supervision and no satisfactory method has been developed. The problem as attacked in the United States involves the feeding of an equal amount of ganister each time, the addition of the proper quantity of milk of lime and the use of exact amounts of water, together with a definite grinding time. The amount of work done on the brick mixture by the pan varies somewhat with wear on the muller tires, scrapers, and pan bottom. This is not easily judged or determined, but must be taken into account in developing a standard grinding practice. The make-up of the feed to the pan is never twice alike as varying percentages of fines are included with each charge. This presents the problem of developing some method of crushing and sizing which will insure a standard feed at all times.

Standard Tempering Practice

Search for the easiest method of developing a standard tempering practice would direct attention to preliminary dry grinding and sizing and the use of a cement mixer. However, the texture of the mud produced in this manner is not considered desirable by present standards and very little has been done to develop the method. It is possible that certain refinements could be introduced into the process and satisfactory brick produced. Dry grinding is less destructive to the pans and the upkeep on the grinding, sizing and mixing equipment would undoubtedly be lower than with present equipment and methods.



Cross-Section Thru a Jaw Crusher Which Gives an Idea of the Inner Workings of This Equipment.

European Practises

European silica brick manufacturers have realized the importance of standard grinding practices and much has been done to develop methods of scientific control. The grinding is usually done in medium sized wet pans driven by individual motors. The motors are severally connected with recording ammeters which have charts in plain view of the pan operator at all times. By experimental runs the desired size of grain, quantity of water and length of grind was determined. The ammeter record charted the course of each grind and a standard chart was adopted for daily use. This method insures uniform grinding and tempering results. In one case the first five minutes of the cycle is consumed in dry grinding. At the end of this time the lime is added in the form of a mush. The reduction in amperage is very noticeable when water is added and when the recorder pen recedes to a certain specified point the water is turned off. The grind then continues about 15 minutes until at a predetermined point in the cycle the pan is emptied and a new dry batch of material added. Very accurate results should be obtained with this method. By referring to the ammeter chart one may note the relative power consumption of an empty pan and of both the wet and dry grinds.

Grinding in a Wet Pan

The average weight of the charge fed to an eight foot wet pan is about 1,100 pounds. When the pan is charged the milk of lime is added and sufficient water is allowed to run into the mixture to make the mud good and wet. Grinding continues about 20 minutes, depending on the size of material fed and texture of mud required. Toward the end of the grind a quantity of crushed silica brick bats is added to the pan. The percentage of bats used varies according to the breakage conditions on the plant at the time, and is usually not less than eight per cent. nor more than 20 per cent. Ten per cent. may be taken as a good average. The lime fed to the pan must be figured on the basis of the quantity of bats used as the burned brick already have their percentage of lime. Brick have been made as high as 35 or 40 per cent. of bats and they apparently gave just as good service as the ordinary product. It would seem that a large percentage of bats in the mixture would increase the service of the brick, as the amount of trydemite present in such a brick should be considerably in excess of that found in the usual brick. There is, however, a tradition which limits the maximum quantity of bats used commercially to 20 per cent. In using large quantities of bats the amount of lime added is so reduced that the brick are hard to handle after drying. This results in rounded corners and edges and a high green brick loss. The mechanical strength of the burned brick is also somewhat reduced.

Sand Reduces Plasticity

Ganister from certain localities develops a sort of plasticity or stickiness in grinding which makes molding difficult. To cut this plasticity a small amount of pure white silica sand may be added to the pan. It is believed by many that the addition of sand is detrimental to the brick. This is true to some extent, but it has been proven that additions of sand up to ten per cent. have no appreciable effect on the strength of the brick. The usual addition of sand for cutting the plasticity of the brick mixture seldom amounts to more than five per cent.

The pan operator is the sole judge of the suitability of the mud for molding and his method of testing it is very crude indeed. The mixture is ground too wet for molding and a certain amount of dry scrap is added to dry up the mud. Green brick breakage usually supplies plenty of scrap but, in the event it does not, mud may be specially ground and dried on the floor for this purpose. The pan tender tests the feel of the mud in his fingers, squeezes a ball of it in his hand, and if in his judgment it is ready for the tables he empties the pan. This method permits considerable variation in size of grain from one pan to the other.

Variations Constantly Occur

Samples were taken at random from batches of regular grind each day for a week and screen analysis made. The results show the variations occurring regularly in the grinding process and it is fair to assume that this is one of the principal reasons for the lack of uniformity in silica brick.

Mesh of Screen	%	%	%	%	%	%	Average %
On 4 Mesh,	.40	.20	.00	.40	.20	.20	.23
On 8 Mesh,	8.20	12.40	9.60	10.00	10.00	10.80	10.17
On 10 Mesh,	6.80	6.00	7.80	7.00	7.20	8.00	7.13
On 20 Mesh,	18.00	16.00	17.60	17.60	17.00	16.00	17.04
On 30 Mesh,	9.80	9.40	8.80	9.20	9.60	9.60	9.40
On 40 Mesh,	5.20	5.40	4.40	5.40	3.80	4.20	4.73
On 50 Mesh,	6.40	5.60	5.00	6.00	6.60	6.00	5.93
On 60 Mesh,	4.00	4.00	3.60	3.80	3.20	3.60	3.70
On 80 Mesh,	3.80	4.00	3.40	3.80	4.00	4.20	3.87
On 90 Mesh,	3.20	3.20	3.00	3.20	2.60	2.20	2.90
On 100 Mesh,	1.80	2.40	2.20	2.00	1.80	1.80	2.00
Thru 100...	32.40	31.40	34.60	31.60	34.00	33.40	32.90
TOTALS ...	100.00	100.00	100.00	100.00	100.00	100.00	100.00

No satisfactory means of obtaining an exact screen analysis before the batch is emptied, has been devised, as the pan should be stopped until the analysis is complete and the loss of capacity would be so great that no one has seriously tried to develop such a text. As long as the industry can get by with ancient methods of grinding control no effort will be made to improve them, altho much criticism has been leveled at these methods and every operator knows that many of his troubles originate in the grinding department.

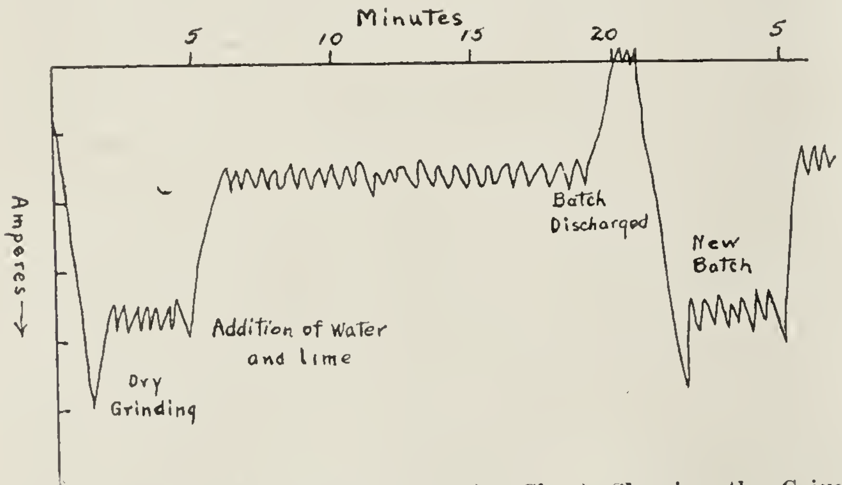
Size of Grain Is Important

Size of grain has a great deal to do with both the mechanical strength of a brick and its behavior in service. A coarse grind is commonly used for open hearth brick, while for coke oven and gas machine service a finer grind is required. The coarse grained brick is not as sensitive to thermal shock as the finer grained product, hence it will not spall as readily. The fine grind produces a brick with a high thermal conductivity, which resists abrasion well and is more or less impervious to gases, but it does not give satisfactory service under varying temperature conditions.

Fineness of grind has a very decided effect on manufacturing breakage. Losses are always higher on odd shaped brick where a coarse or medium ground mud is used. In the case of some very difficult shapes high breakage was thought to be caused by the coarse grind. Special attention was paid to molding the remake from fine mud and the brick came out almost 100 per cent. Time after time this same condition has been known to obtain.

Fine Grinding Makes for Better Product

Workmanship is affected to a certain extent by the fineness of grind. While there is no excuse for a poorly filled or spongy brick being made from the coarse or so-called regular grind, better workmanship and appearance is obtained with the finer grinds, and with considerably less effort on the part of the molder. However, appearance is one of the least attributes of silica brick and the convenience of the molder adds nothing to the service they will give.



Reproduction of a Very Fine Ammeter Chart, Showing the Grinding Cycle in Use in a Foreign Country. Such a Record Helps in Obtaining Uniform Results.

The coarse or regular grind displays more uniformity in the various tests for mechanical strength than the finer grinds. Coarse grinds have a higher modulus of rupture than fine grinds, altho their cold and hot crushing strengths are somewhat lower than for fine grinds. An average screen analysis of regular, medium shape and coke oven grinds is given herewith:

A Good View of a Gyratory Crusher. The Low Maintenance Cost and Freedom from Repairs of This Type of Crusher Are the Things That Make It Popular.

	Regular %	Med. Shape %	Coke Oven %
On 8 mesh	10.40	8.6	.4
On 10 mesh	7.13	6.0	4.8
On 20 mesh	17.04	17.4	19.8
On 30 mesh	9.40	10.00	9.0
On 40 mesh	4.73	5.2	4.8
On 50 mesh	5.93	5.8	5.2
On 60 mesh	3.70	2.8	3.6
On 80 mesh	3.87	3.6	4.2
On 90 mesh	2.90	2.4	3.8
On 100 mesh	2.00	1.8	3.2
Thru 100 mesh	32.90	36.4	41.2
	100.00	100.00	100.00

A prominent French authority on silica brick has stated that at least 25 per cent. of impalpable material passing a 200 mesh screen is necessary for the production of a satisfactory brick, indicating that medium shape and coke oven mud should contain a relatively higher percentage of fines. The specific gravity of brick produced from coarse mixtures is higher than with brick made of finer material. The larger particles do not invert readily in commercial firing and are found to be mostly quartz with a fringe of cristobalite. Practically all inversion to tridymite takes place in the ground mass of the brick which is made up of the finer ground material. The finer the grind the greater the inversion and the lower the specific gravity will be under ordinary commercial conditions of burning. It is apparent that some European manufacturers are grinding their raw materials in such a manner as to produce a large percentage of very fine material with a view of securing more complete inversion to tridymite in the ground mass of the brick. The amount and size of the larger particles is not reduced, and it is probable that the desired screen analysis is secured by the addition of very finely ground material during the tempering operation.

In American practice no additions of finely ground material are made, altho it appears that better brick could be made by this method. Our chief concern has been to produce the best brick possible without departing from regular wet pan grinding.

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A VERY GOOD SUGGESTION

A splendid suggestion, which can be used by clay products associations to make monthly meetings of their district groups more attractive and better attended, is contained in the 1923-1924 program of the Engineering Advertisers' Association. In it are listed the separate programs for each monthly meeting, from September, 1923 to April, 1924, with the subjects to be discussed, the speakers' names and the topics upon which they will speak. Thus the members of this association know, by consulting this program what the subjects to be discussed are, which evening they are most interested in and they can come prepared to talk intelligently and bring along valuable suggestions from their own experience.

This system is in vogue among publications where the issues are planned for many months in advance. Once it is started it is easy to keep up. By having the program planned far in advance, as suggested, it is also possible to secure a better balance in the nature of subjects discussed.

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FORM COMPANY IN TACOMA

The Tacoma Tile & Brick Co. has been incorporated in Tacoma, Wash., with a capital of $50,000, by John Buffelen, George Brewer and Louis Mickelson, it is reported.

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Car Shortage in South—Production Still at High Levels

WITH THE VOLUME OF ORDERS received by the larger southern brick plants during August more than 100 per cent. greater than the orders booked during August, 1922, production began to improve early in the month of September, and while definite figures are not available at this time, it is generally believed by the larger producers to have been materially greater than September, 1922.

The monthly report of the Federal Reserve Bank of Atlanta, issued October 5, shows production in August to have been more than 20 per cent. greater than in July, with the biggest improvement the last week of the month, due to the unusual increase in the volume of business booked; as compared with July the number of orders booked in August were nearly 60 per cent. greater, and September business is expected to exceed this mark when definite figures are reported. The industry is employing about the same number of workers as during the early part of the summer, and also about the same number as at this time last year. Unfilled orders on hand are about 20 per cent. greater now than they were at this time a year ago.

Troubled With Car Shortage

Some trouble has been experienced recently with the freight sitution, due to the shortage of cars, and brick and clay products shipments are not nearly as large as they would be if the car supply was normal. Cars are being largely used for agricultural shipments, and not much improvement is looked for before the early part of November. Larger plants are experiencing less trouble in this regard, however, than the smaller plants, as the inward movement of raw materials is providing enough cars to relieve somewhat the shortage of empties. As a whole the present supply of empty cars seems to be about 20 to 30 per cent. less than the industry requires.

No Rate Increase Expected

Much interest is being manifested by all brick and clay products manufacturers of the section in the investigation of the Interstate Commerce Commission relative to freight rates on clay products in the southern states, with the industry fully prepared to present a great mass of data to the commission tending to show why rates should not be increased at this time. A definite decision is looked for within the next few weeks relative to the rate situation, with the manufacturers confident the proposed increases will be suspended by the commission for an indefinite period. As will be recalled, the commission recently announced schedules that would have greatly increased rates all over the South, and then postponed them until the latter part of the year pending a further investigation, due to the widespread opposition that developed. In the meantime, the commission is conducting an investigation to determine whether the proposed schedule shall be cancelled, or allowed to go into effect on the dates specified.

Construction is again very active thruout the South, and is resulting in a steadily improving demand for brick and other burned clay products. Reports received in Atlanta from the 16 largest cities of the various southern states indicate total construction in these cities the first nine months of this year—January to September inclusive—well in excess of $400,000,000, which is considerably larger than the same nine months of 1922, and one of the best records in the history of the district.

Many Clay Companies at Exposition

The brick manufacturing and clay producing industries of North and South Carolina came in for their full share of attention at the annual Made-in-Carolina Exposition this year, held at Charlotte, N. C., September 24 to October 6, with a wide variety of Carolina made brick and other burned clay products on display. With the possible exception of textiles and furniture the brick and clay producing industries can be classed as among the most important in the Carolinas, principally the latter, for in this section are found some of the most extensive clay deposits in the United States.

Among the exhibitors in the brick and clay products field at the exposition were the following:

Pollard Building & Supply Co., of Burlington, N. C.; Hilton Pottery Co., of Jugtown, N. C.; Chamber of Commerce, of Sumter, S. C., with a cooperative display of principal products of that district, including brick, and so forth; Pomona Terra Cotta Co., Greensboro, N. C.; Home Builders' Supply Co., of Burlington, N. C.

Capital for the Clay Industry

This Is the First of a Series of Articles on the Above Subject—It Tells of Obtaining Capital for the Purchase or the Development of Either or Both a Clay or Coal Property, with the Anticipated Manufacture of One or More of the Various Clay Products

Joseph K. Moore

Consulting Engineer, New York City

THERE ARE FIVE distinct needs of the clay manufacturer for outside financial assistance. He requires capital, 1. For the development of a clay and coal property, looking toward producing some manufactured product; 2. For the expansion of a plant already in the successful stage of manufacture; 3. For the development of some piece of apparatus that is an improvement in the art; 4. For the purchase of other producing properties in the same or allied branches of the industry; 5. For temporary or permanent use in the merging of two or more plants in the same or allied branches of the industry.

Where the Money Is

Accumulations of wealth are centered in our large cities in the hands of banks, trust companies, private bankers, and capitalists. While certain groups specialize in certain classes of investment to the exclusion of others, the standards by which each class of investment is measured are comparatively the same.

To these money centers come or are sent all kinds of projects seeking financial aid—from the highly meritorious to the absolutely worthless. They come in a seemingly endless stream, day after day, year by year. Over 90 per cent. of these are cast aside, after the first casual glance has shown a deficiency in some particular, thought to be essential, which prevents their further consideration. No infallible rule can be formulated that will assure the acceptance of even the most meritorious projects, but experience has shown certain essentials that must be included and certain pitfalls that must be avoided, in order to obtain favorable consideration.

To Obtain Funds

An attempt to review and explain the complicated machinery of modern financing is outside the purpose of these articles. Its aim is solely to explain to the clay industry the successive steps necessary, in the procedure of obtaining money for the development of its properties; the expansion of its present business; or the exploitation of the mechanical improvements in its art; and to point out some of the pitfalls to be avoided.

To obtain funds from the sources of accumulated wealth, it is necessary to appeal to the developed instincts of those who have succeeded in acquiring and already possess or control wealth.

Capital Must Be Safeguarded

The first essential, in presenting a project, is proof that the original capital is safeguarded. It must be shown that the anticipated returns will be adequate to lay aside, from earnings, a sufficient amount to assure the return of the original capital in a reasonable length of time. If securities are issued for the initial money, it should be shown that they can be amortized in from 10 to 20 years. In addition, earnings must be great enough to set up reserves for depreciation, obsolescence, and all taxes. After all these protective features are cared for, the remaining net profit must be greater than normal interest.

A large number of projects meet all these requirements, but the manner of presentation is so unfortunate that they are condemned without a hearing.

Don't Submit Proposals Carelessly

It must be remembered that a man who has been successful in the accumulation of wealth has developed certain tastes. He is critical concerning the form, neatness, accuracy and good looks of the documents which he handles.

Too many seekers of capital, failing to appreciate the keen competition for money, submit their proposal in the most casual fashion and with amazing credulity. The following excerpt from a letter of submittal will make clear the point. The applicant displayed his wares in this fashion:

"We have recently bought 1,240 acres of land on which we have six seams of high grade clay and four seams of very fine coal. We are close to a railroad and have been assured that this is a very valuable property. We wish to develop this property, and if you are interested in furnishing the money for development we would be glad to put in our property and form a company. If you will let us know on which train you will arrive we will be pleased to meet you and show you the same. Awaiting your reply, and so forth."

Capital does not take the next train to look over properties.

Money Now Hard to Get

Money at the present time is especially hard to obtain for development purposes, due to the fact, that large amounts have been withdrawn from productive industry and invested in tax free securities. Many sources of capital that ordinarily are available to expand and develop industry have dried up due to the excessive surtaxes now being imposed. The majority of men with wealth prefer to place their surplus funds in low revenue, tax free bonds and be relieved from worry over income taxes rather than take a normal risk with the hope of greater financial rewards. They are rather justified in this position because the surplus profits they receive, in the more hazardous adventures, is not of sufficient magnitude after paying the government taxes, to compensate them for the risk of their original capital.

There are still some sources of available capital but to reach these sources, the project must be carefully prepared for presentation.

The two essentials are the engineers' examination and report and a carefully prepared prospectus, which sets forth in concise language the merits of the project, the anticipated earnings, and a financial plan.

The Engineers Examination

One of the early problems the owner of a property has in preparing his proposition for financing, is the selection of the engineer who is qualified to make such a report. It is preferable to obtain the services of one who not only has the technical experience but also one who has had financial training. Many high grade engineers, perfectly competent to plan and execute engineering development, do not have the necessary training in writing reports which tell the story of the property, in such form to be intelligent and pleasing to the prospective investor. Some of the most capable and eminent engineers present their facts in such technical language that it becomes necessary for the capitalist to employ another engineer to review the report and either tell him or rewrite the report, stating "what it is all about!"

Present Proposal in Clear Manner

There is an expression prevalent in financial circles that one must know the language of Wall Street in order to succeed in getting money. This is a great exaggeration but it has some elements of truth. A busy man is more receptive to a proposition when presented in a form which is understandable to him than if he has to expend both time and effort in arriving at the facts. The integrity of the engineer must be above question and his national reputation has value, but if the report is accurate and is written so that the facts are easily obtained and is presented so that it is pleasing to the eye, the document will get a hearing at court and may even become a valuable selling instrument.

Experienced writers of engineering reports that are to be used for financing, have found it to be an advantage to summarize the facts of the report on the first pages. These facts should be arranged in the order that a capitalist usually tests a proposition.

Use Illustrations

It is also an advantage to have the document fully illustrated with photographs and maps, in order that the investor may form his own picture of the property without too great a use of words.

Money is the force behind industry which turns the wheels of our factories. At some time or other almost every manufacturer is in need of capital, either to start, to continue or to increase his operations.

When such a time comes to you, how will you go about the task of obtaining this money?

To smooth the path into capital's good graces, Joseph K. Moore, Consulting Engineer, has written a series of articles, of which this is the first, which covers all needs of the clay products manufacturer for outside assistance.

Start reading them with this issue.

In writing a report for, "The development of a clay and coal property looking forward to the manufacture of some product," the following questionnaire will best illustrate the ground to be covered:

A. COAL

1. Examination of the records of the Bureau of Mines, United States Geological Survey, Department of Commerce and Labor, and State Surveys, also the procurement of maps from these sources.
2. Kind of coal.
    a. Anthracite
    Semi-Anthracite
    Bituminous, and so forth.
3. Quality of coal.
    a. Analysis
    Physical characteristics
        1. Friability
        2. Shipping qualities
        3. Liability to spontaneous combustion.
4. Number of measures.
5. Thickness of measures.
6. Name of measures.
7. Distance between measures.
    a. Can they be worked independently?
8. Location of measures in relation to surface.
9. Problems of drainage.
10. Problems of ventilation.
11. Conformity.
12. Probability of faults, dykes and slips.
13. Pitch of measures.
14. Strike of measures.
15. Total tons of coal on property.
16. Estimated recoverable coal.
17. Estimated percentage of extraction both on the advance and withdrawal.
18. A proposed plan for working.
19. Estimate of development cost.
20. Estimate of mining cost under proposed plan.
21. Problems of transportation.
    a. Number of railroads.
    b. Policy of serving railroads regarding car supply, car distribution, and so forth.
    c. Study of rates.
22. Study of probable accident liability.
    a. Liability of gas.
    b. Liability of falls and bad structure, and so forth.
23. Study of labor conditions.
    a. Union or non-union.
    b. Housing.
    c. Supply.
24. Study of state mine laws and restrictions.
25. Economic study.
    a. A study of markets.
    b. Review of the success and failures of other companies in the same district and reasons for their success or failure.
    c. Competition.
    d. Business trends in the industry.
    e. Proposed management.
    f. A comparison of costs, markets and business cycles of the industry with relation to the investment and estimated earnings.
    g. Estimate of amount of time and money that will be tied up before earnings are returned.
    h. Estimated value of property.
    i. Estimated life of property at various rates of extraction.
    j. Comparison of the life of the property with the proposed invested capital.
        1. Amortization
        2. Depletion
    k. Estimated earnings, costs, selling cost and commercial expense.
26. A study of the location in respect to the procurement of supplies.
27. Value and kind of timber on the property.
    a. If property is timbered, will it furnish props and ties and if so for how long?
28. Water supply.
    a. Quantity.
    b. Quality for boilers and drinking.
29. A study of the coal in relation to other possible developments on the property.
30. Photographs of similar developments.
31. Photographs of the property.
32. Copies of geological and mining reports on the property.
33. Geological maps of the property.
34. An examination of the deeds and leases are not necessarily the function of the engineer, but his report should state how the property is supposed to be held.

B. CLAY

The examination and report with reference to the clay follows that of the coal with the following changes:

2 and 3. Tests of the clays must be made based on the standards of the American Ceramic Society. These tests must be made by some responsible clay testing laboratory. This report will class-

ify the clays and give the products for which they are best adapted and also should suggest the best processes of working them.

4 to 20 Inclusive. Same as coal report.

It is necessary to deviate from the coal analysis at this point as a new problem is introduced, namely, one of manufacturing.

The report on the clays from the laboratories, if favorable, usually suggests more than one use for the clay. It then becomes necessary to make a study, in order to select the most favored use.

Study of various industries for which the clay is adapted:

1. Necessary capital needed to go into the business.
2. Costs of manufacturing.
3. Competition.
4. Business cycles.
5. Business hazards.
6. Labor.
   a. Skilled.
   b. Unskilled.
7. Time necessary to accumulate necessary stock in order to make sales.
8. Capital, labor, and stock turnover.
9. Seasonal cycles.
10. Freights.
11. Markets.
12. Advantages gained by a new plant.
    a. Study in progress in the art.
    b. The obsolescence factor in relation to competitive plants.
13. Earning history of other plants in the industry.
14. Comparison of cost estimates with other plants.
15. Rate at which capital could be amortized.
16. Minimum amount of money needed with safety.
17. Necessary working capital.
18. Necessary personnel.

From this study recommendations are made as to the particular product to make, and the kind of plant to build. It then becomes necessary to study the particular problem.

1. The advantages of the coal to the manufacturing problem.
2. Can the coal development be made to pay for the clay development if it is difficult to raise money or the cost of it is high?
3. Is it better to develop the two simultaneously, and why?
4. A study of the economic feature as outlined under "COAL".
5. A more intensive sales study.
6. An organization plan.
7. Numbers 29 and 31 to 35, inclusive, as under "COAL".

From the examination conducted along the lines described, the engineer writes his report. The final work of the engineer is to assemble all the vital facts into a summary, which is placed in the front of the report, so that the financier can quickly grasp the essential features.

From the engineer's report the prospectus or selling document is written.

In speaking of those who possess or control wealth Mr. Moore says:

"The primary instincts of this class are:

"1. A desire for safety or the protection of that which they have already gained.

"2. A desire to add to that which they accumulated.

"3. A desire to show to the world that they do possess this wealth and a seeking of some means of expressing it or building of, 'Temples to their Ideals.'

"It should be evident therefore in order to succeed in obtaining capital, that it is necessary to present one's proposition in a manner designed to appeal to those known inward impulses."

The Prospectus

The prospectus is a selling document. It summarizes the proposition in its most favorable light. Clearness of expression and conciseness are requirements for its success. It should contain:

1. Financial plan.
2. Brief description of property.
3. Purpose for which money is asked.
4. How money is to be expended.
5. Proposed management.
6. Proposed plan for selling.
7. Forecast of first year's earnings.
8. Brief history of industry.
9. Successes of similar projects.
10. Territory served.
11. Estimated life of company.
12. Time in which returns can be expected.
13. Valuation.
14. Future of industry and present markets.
15. Statement referring to the persons who are responsible for the Engineering Report; for legal examination.
16. Audits if any.

With the engineers' report and the prospectus the promoter is ready to seek his capital.

If the proposition requires more than one million dollars, he goes directly to the investment banker; if less, he seeks individual capital. Assuming the investment banker agrees to finance the project, the work of the promoter is finished and the investment banker assumes all responsibility. If it is necessary to seek individual capital the problem becomes more difficult and the promoter must know sources on which he can draw or interest some individual who has entree to money.

Styles of Financing Change

The latter is the usual process. In this case the capitalist usually forms a small underwriting syndicate among his friends and becomes a partner in the business. When this procedure is not successful the promoter then tries to interest people in the neighborhood who are familiar with the property and the proposed management. With the initial amount thus subscribed as a nucleus, he enlarges his field of action until the total amount is procured.

The styles in financing change with conditions and at times very rapidly. The successful promoter must be alert to these changes. A few years ago, preferred stocks were popular, now, due to the income tax law, bonds are more in demand The promoter attempts to frame his financial plan in accordance with these popular cycles. If this is not possible, the wise promoter delays the seeking of capital until his market is favorable to the type of issues his proposition demands. Development projects are at the present time very difficult to finance for reasons mentioned earlier in this article. This does not mean that it is impossible to obtain money, but it does mean that a project to be successful must have a large measure of merit and be most carefully planned and presented.

(*Another Installment October 30.*)

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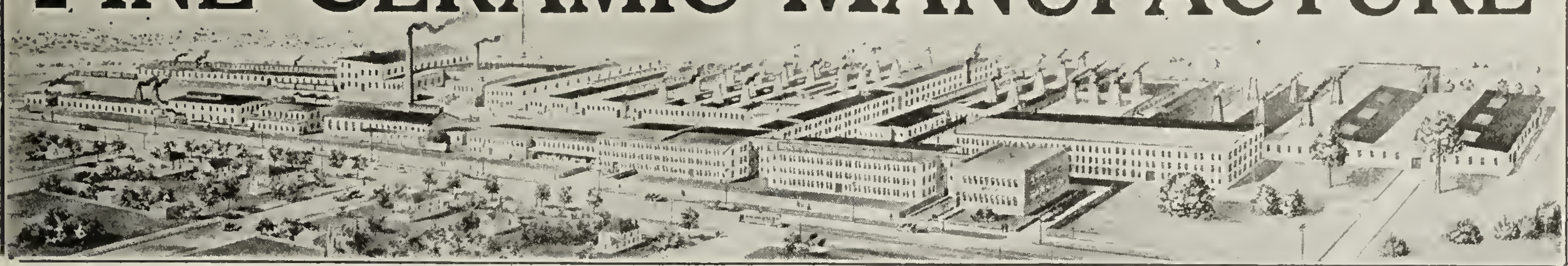
HUDSON RIVER PILING UP BIG RESERVE

Hudson river brick manufacturers are piling up a reserve estimated to be in the neighborhood of 420,000,000 brick or about half as many again as they had burned and ready for shipment at this time last year. There is more Hudson hard brick being distributed to jobs in New York now than there were at times in the middle of the building season.

FINE CERAMIC MANUFACTURE



A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

FIRST MARLOW KILN INSTALLATION

ON THE SAME DAY (September 22) as the first car of ware to have completed the journey thru the first tunnel kiln of its kind built in America was unloaded, one of the editors of Brick and Clay Record was on hand to view the kiln installation and inspect the first ware to come thru. The ware produced on the very first car to have been burned was of such excellent quality that it even exceeded the expectation of the management of the pottery.

Satisfaction Given

The ware produced is floor tile, wall tile and specialties at the Mosaic Tile Co. plant. This plant already operated two other tunnel kilns for several years and completed a third tunnel kiln in August this year. The fourth tunnel kiln, which is a new type and invented by J. H. Marlow, is the most recent kiln. Eventually this plant will undoubtedly use only tunnel kilns because of the satisfaction they have given.

Kiln Described

The Marlow kiln, which was explained by its inventor and R. P. Herrold, secretary of the Mosaic Tile Co. plant, is different from other types of tunnel kilns in many respects. In the first place, it is an open fired recuperative type, designed by a potter of long experience in the industry. The kiln at the plant inspected is 332 feet long. The width of the setting space on the truck is 52 inches and the vertical setting space is exactly six feet. The trucks carry 108 saggers each, and the kiln holds 54 trucks at a time.

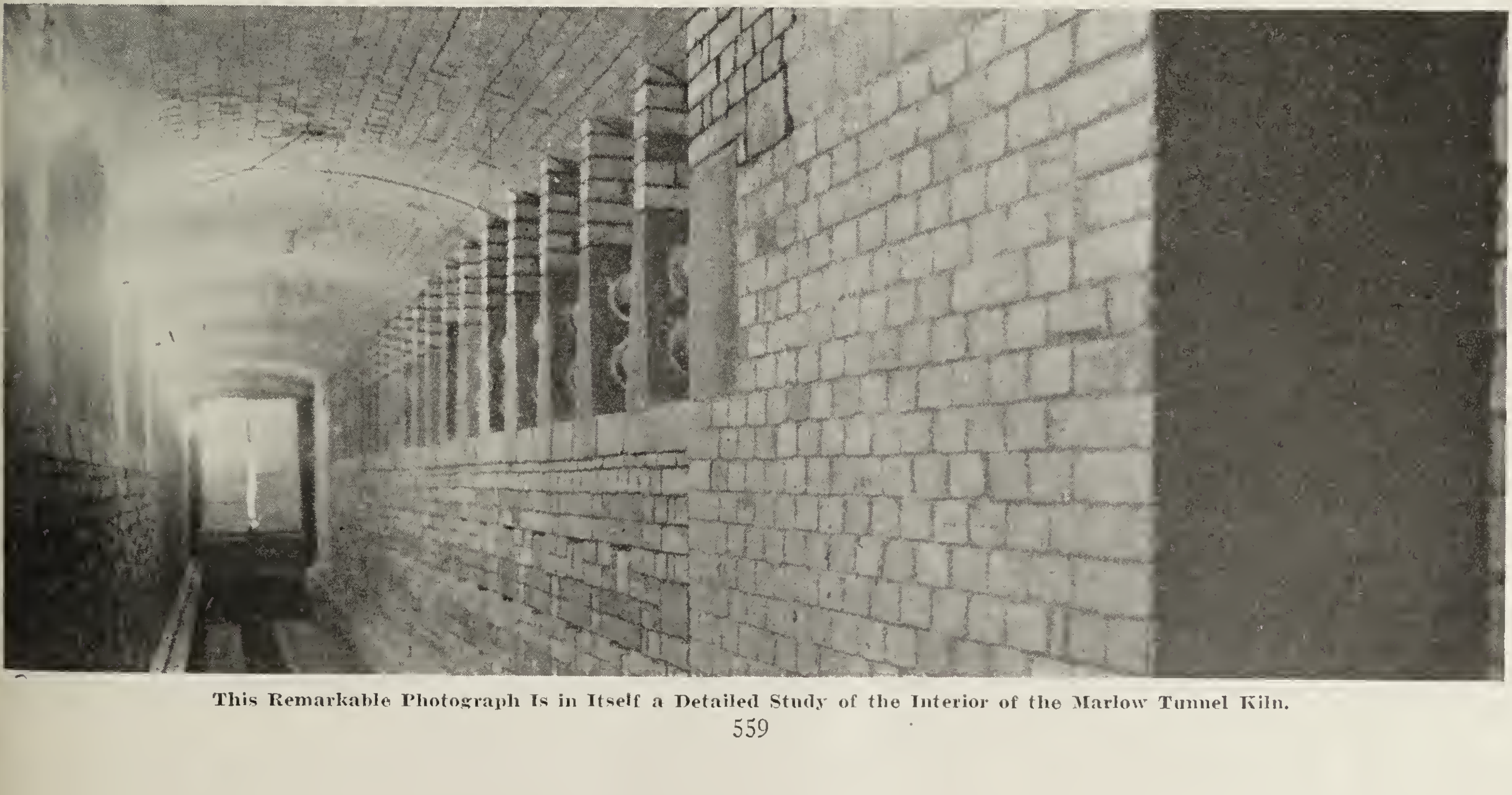
Novel Construction

The cars are not sand sealed but are built with staggered side construction. They are pulled instead of pushed. A three horsepower motor pulls the train of trucks. Each truck is automatically connected to the preceding truck by a simple coupling device attached to each truck. It is claimed that pulling the cars keeps a better line than pushing and, moreover, requires less power for an equal amount of work.

Cone Pats Taken from the First Burn of the Kiln Show the Control of Temperature Possible.

The air used for combustion is first preheated by being drawn thru flues along the tunnel and is then superheated when it passes thru the firing zone. Later this air meets the incoming combustion gases, which have also been preheated. The volume of air consumed is regulated by the expansion of gas and the size of the orifice thru which it enters into the combustion chamber. This in turn is controlled by the temperature of the hot zone. Thus a semi-automatic operating condition is obtained.

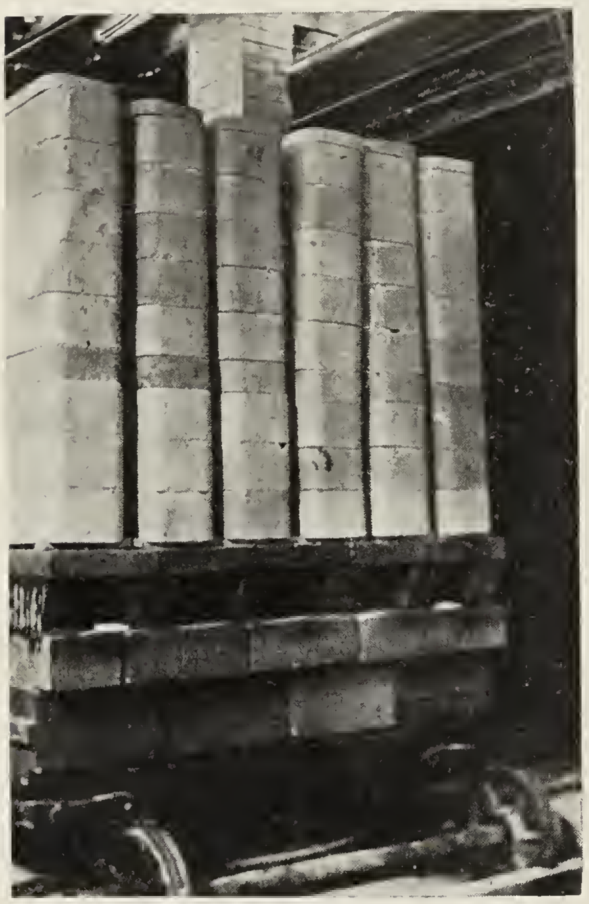
A 30 inch fan driven by a ten horsepower motor is all



This Remarkable Photograph Is in Itself a Detailed Study of the Interior of the Marlow Tunnel Kiln.

that is required to regulate the flow of gases. The kiln is fired with natural gas—four burners at each side. The estimated schedule for the trucks will be 1½ hours' interval for vitreous ware burned to cone 10-11. For glost burns at cone 2 the car interval will be 45 minutes.

Absolute Temperature Control



Loaded Car About to Enter Kiln—Hitching Device Seen Just Above Wheels of Car

It is claimed for this kiln that absolute equality of temperature thruout the entire cross section in the hot zone can be obtained. Moreover, it is maintained that it is possible to vary the temperature up to 70 deg. F. between bottom and top of car in either direction, i.e., the bottom can be controlled at a temperature up to 70 deg. F. hotter than the top, or vice versa.

The accompanying photograph of two series of cone pats taken at two different periods is an excellent demonstration of the temperature in the cross section of the tunnel. The pats were placed in each tier of saggers from top to bottom. Each pat of cones is almost identical in the degree to which they have been affected by the heat treatment in the kiln. They are a remarkable testimony to the uniformity of the heat from top to bottom in the kiln.

The Marlow kiln is much larger than the other tunnel kilns on the plant and has a production capacity greater than the other tunnel kilns in the proportion of nine to five. The kiln was built in 12 weeks. Engineering work was done by the Robertson Pease Co., under the supervision of J. Marlow, the inventor's son.

Burn Variety of Ware

The first Marlow kiln to have been built was completed in 1915. At the present time there are nine kilns operating in England, two in France and one in Italy. They are burning products such as brick, sanitary ware, flatware, spark plugs, stoneware and roofing tile at temperatures varying from 1,900-2,700 deg. F.

* * *

CALIFORNIA'S POTTERY CLAYS

The objective of the next motor tour by the Department of Mines and Mining of the Sacramento Chamber of Commerce will be one of California's largest and most famous clay pits and clay plants, that of Gladding, McBean & Co., located in and near Lincoln, Placer County. The Lincoln Clay Products Co.'s clay pit and storage plant there also will be visited. It is planned to make the tour in about eight or ten days.

It has been pointed out that the clay industry of Superior California, yet in its infancy, is an important one and one that permits of almost unlimited development owing to inestimable deposits of clay of all grades in the northern counties. Records of the state mining bureau show that the raw pottery clay output of 36 producers in 12 counties of the state for 1921 amounted to 225,120 tons, valued at $362,172. In only one year has this total been surpassed. That was 1909, when 299,429 tons, valued at 405,647, were produced. From the crude clay, products valued at $5,478,848 were manufactured in 1921 by 75 plants. In 1920 the clay products amounted to $3,923,518, showing a substantial gain for this industry in a year. Brick products are not included. Placer County ranks second in the state in pottery clay production. Riverside County led, while Los Angeles County was third and Amador fourth.

The pottery clay produced in Placer and Amador Counties is used in architectural terra cotta, drain, mantel and roofing tile, chimney, flue lining and sewer pipe, garden furniture, stoneware, porcelain and fire clay products. Altho many of the pottery plants of California still import their china clay for the finer grade products from England, several large kaolin deposits have recently been discovered in Superior California. In 1884 a large china clay deposit was found, but the discoverer died without revealing its location. A search for this "lost clay" has been made for 34 years and in 1918 it was rediscovered by Thomas Normile. Since then other kaolin deposits have been located. In almost every northern county of California great beds of ordinary pottery, brick and tile clay are found, awaiting commercial development.

* * *

SALEM CHINA ADDS TO PLANT

Erection of a large addition to its plant, to be built at an estimated cost of $10,000, is planned by the Salem (Ohio) China Co. It is understood the new addition will be added to the decorating department of the plant, and will necessitate the enlarging of the number of employees by about ten per cent. An increase in the volume of business being done by the company is ascribed as the reason for the contemplated expansion.

* * *

ATLAS CHINA CO. TO EXPAND

Contracts are expected to be let soon for the erection of additions to the plant of the Atlas China Co., Niles, Ohio. These will greatly enlarge the annual production of the company, bringing it to a value in excess of $100,000. When the contemplated additions are completed the company will have nine kilns. It is understood the company's order books are well filled, bookings running far into 1924 and insuring capacity operation. A. O. Ahrents is president of the company.

* * *

SHENANGO BUILDING NEW KILNS

The Shenango Pottery Co. of New Castle, Pa., will be among the largest in the United States devoted to the manufacture of hotel and restaurant china ware, it is stated, when the new kilns now being constructed are completed. It will give the plant a 25 kiln capacity. Numerous other small buildings are being erected to take care of the enlarged business. There are 600 employes now on the roll of the company and more will be added.

* * *

Bush English China Co., Ltd., Port Hope, Ont., has been incorporated.

* * *

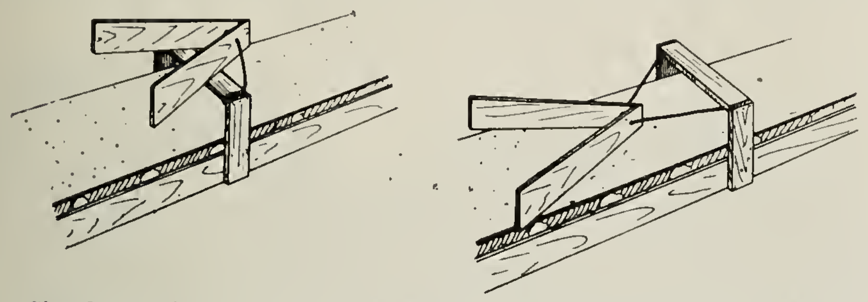
FLORIDA CLAY CO. BUSY

Business is good at the plant of the Florida China Clay Co., Leesburg, Fla., and the plant is being operated to capacity. The company has recently purchased oil burning and electrical equipment to enlarge its plant facilities and increase its capacity. In line with its program of expansion the company is launching an advertising campaign by means of which it hopes to increase its markets. This plant operates the entire year.

Management and Superintendence

DUMPING ANYWHERE ON CONVEYOR BELT

A neat little scheme which can be used to advantage on any plant having a long conveyor belt over its clay storage or some such similar installation, is explained and illustrated here. As the drawings show it is just a simple little device which makes possible the dumping of materials from the conveyor at any point along the belt. It is a V shaped contrivance built of wood and the drawing shows how it is operated. A number of these can be placed along the belt at any place desired and thus material can be dumped exactly where it is needed. One great advantage of this device is that in the case of a clay storage, the room can be entirely filled. In many cases this little device will save the expense of an expensive electric tripping machine.



Simple Device for Dumping Material from Conveyor Belt at Any Place Desired. Position at Left Permits Material to Flow on—at Right Material Is Thrown Off Sides of Belt

* * *

CORRECT INCLINES FOR CHUTES

What must be the minimum angle of fall in order that a material may slide by its own weight? Manufacturers of argillaceous products have frequent occasion to ask themselves that question. It crops up when considering the movement of clays, either raw or pulverized, wet or dry.

There are various factors which influence the inclination of these slides or what amounts to the same thing, the angle of fall. These factors are, nature of the material, its weight, its hardness, shape and size of the grains and so on. In moving hard materials in which the particles do not have a tendency to stick together, a lesser angle of fall is required than with soft and thin materials. Thus, as a general rule, a clay for refractory products slips more easily than a surface clay or an argillaceous schist. This is the reason why these latter are very often vertically dumped.

It is certain that a material, whatever it is, slides more easily on a metallic or polished surface than on a wooden one, and it is equally obvious that a heavy substance slides more easily than a light one.

In the case of a certain fire clay bank where the clay is moved on a slide with a metallic surface, the angle of fall in the chute is only 33 deg. Altho, in this particular instance, the angle was sufficient, it is generally necessary to provide a greater angle. 38 deg. is considered better and some engineers even advise 45 deg. Kidder in his book recommends 36 deg. as the correct angle of fall for the dry clay in lumps. This figure must be increased somewhat for pulverized clay containing the same amount of moisture.

* * *

HANDY RULE FOR BALATA BELTS

In looking thru a catalogue published by a prominent manufacturer of balata belts, I found a table that gives the horse power of various plies of belt from three to ten, inclusive, and for speeds ranging from 500 to 4,000 feet per minute. I wondered why the information couldn't be given in the form of a rule rather than as a table, so I "doped around" and formulated the following rule which gives precisely the same values as the table, but its range is broader.

Subtract one from the number of plies, multiply by the number of revolutions of pulley per minute, then by the diameter of the pulley in inches, and then by .000158. The result is the number of horse power that a belt one inch wide will transmit.

To find the width of balata belt needed to transmit a given horse power divide the horse power by "Result No. 1."

Where you have a given pulley and want to determine the number of plies of balata belt to buy to transmit the power, this is the way to proceed:

Multiply the width of the belt in inches by .000158, then by the number of revolutions per minute made by the pulley, then by the diameter of the pulley in inches and divide the result into the horse power to be transmitted. To this add one. The final figure is the number of plies.

For example, you have a pulley that is ten inches wide and 30 inches in diameter. You want to transmit 50 horse power at 400 r.p.m. How many plies of balata belt are needed?

Inasmuch as a belt should never be as wide as the pulley on which it runs, we will figure that this belt may be nine inches wide. That will leave a margin of one-half inch on each side of the pulley. We now proceed as follows, inserting values in the above rule:

$$9 \times .000158 = .001422$$
$$.001422 \times 400 = 0.5688$$
$$0.5688 \times 30 = 17.07$$
$$50 \div 17.07 = 2.93$$
$$2.93 + 1 = 3.93$$

Therefore, a four-ply balata belt will do the trick.

These rules apply equally to 3, 4, 5, 6, 7, 8, 9 and 10-ply balata belts.—W. F. Schaphorst.

* * *

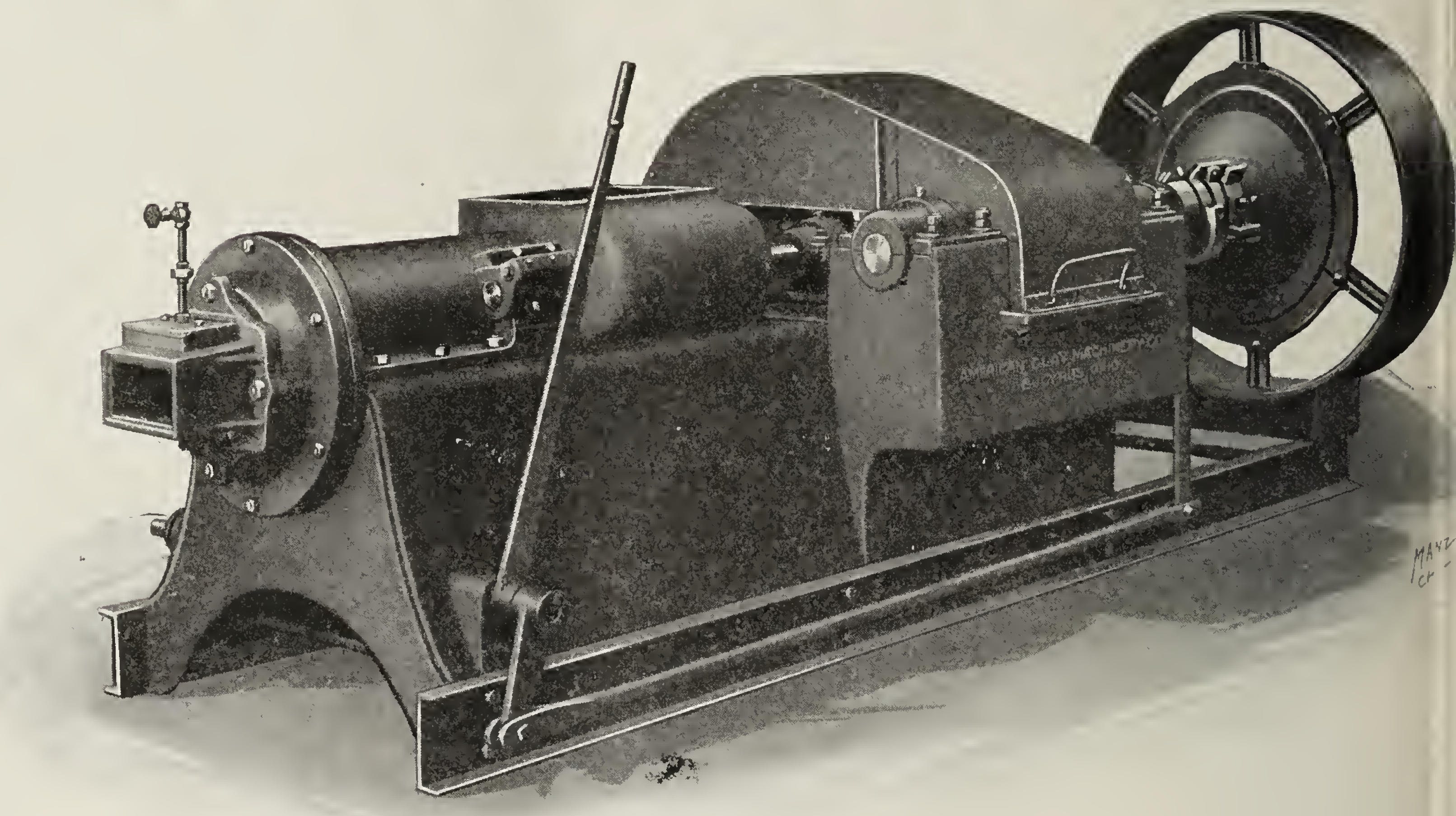
REARRANGING EQUIPMENT INCREASES CAPACITY 25 PER CENT.

Very often, just a simple change involving very little outlay for additional equipment and only a little time and labor to execute, will effect a remarkable saving in the time of doing a certain operation, amount of labor required, power or equipment necessary or will increase the production. The superintendent of a New Jersey hollow tile plant proved this point conclusively by making a change in the machine room just at a time when business was brisk, too.

Formerly the machine room of this plant was equipped with two hollow ware machines and the total production was 3,300 tons of tile per month. The room was changed by taking the pug-mill of one of the machines and using it for a primary pug-mill for the other machine. Only one auger machine is now in operation, the other being set aside. As a result of this change the machine room arrangement was made more efficient.

From a primary pug-mill the clay is conveyed by another pug-mill directly over the auger machine. This double pugging enabled the superintendent to speed up the auger machine considerably. It now runs at 32 r.p.m. despite the fact that the upper limit for this machine was claimed to be only 29 r.p.m. This extra pug-mill is not essential to the

PRODUCERS



"American" No. 233 Auger Machine

These "Built Right Run Right" Units of the "American" Line are Producers and Savers. In production they "Surpass" and in saving they "Eclipse" because of the years of experience back of their Designing and Building. It is to greatest possible Production and greatest possible Saving that you must look for satisfactory and profitable business. In both of these The American Line will cooperate. We build every Clay Plant Need.

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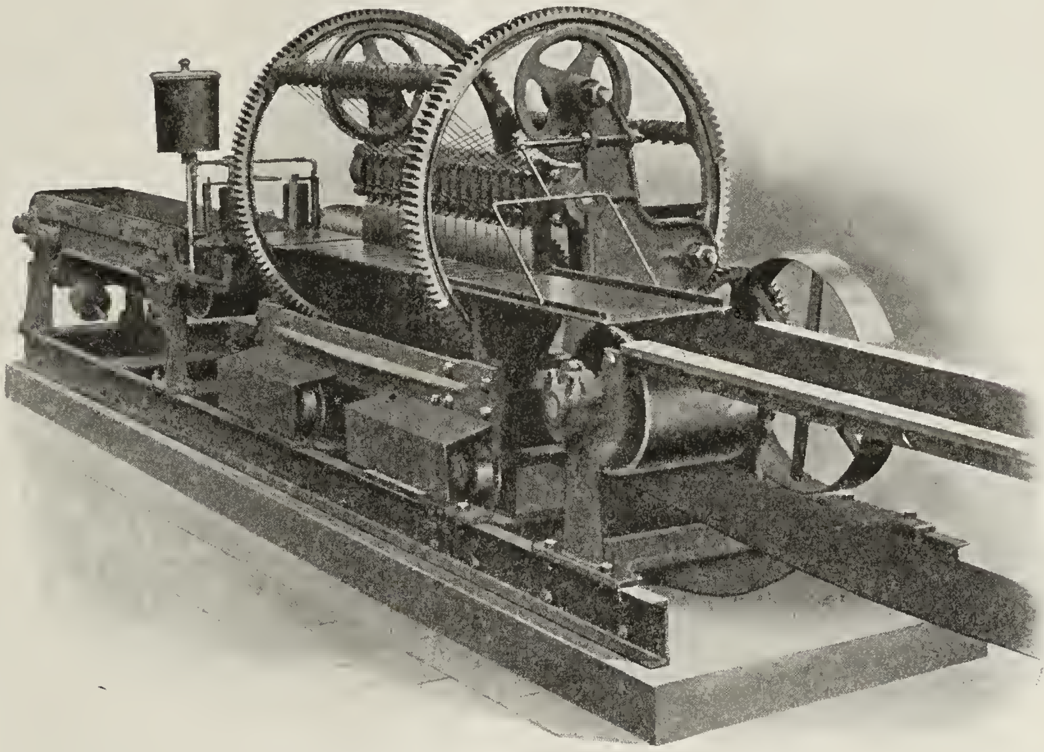

"American" No. 342 Cutter

"American" No. 304 Pug Mills

mixture but it enables faster operation and hence greater production.

The result of this rearrangement was an increase from 3,000 to 4,300 tons production per month, with no increase in the total number of men used and with very little expenditure of money.

*3. Dies for Auger Machines**

Stull's Lubricated Die

Best taper is from one-eighth to one-fourth inch per foot. Plastic clays should have a higher taper than short clays. The greater the back pressure from carrier and cutting table the lower the taper possible.

Example of an eight inch die with taper one-fourth inch per foot.

Use an intake opening of three inches up to the point where lubrication starts; that is, it is a dry die up to that point in order that the column be formed and smoothed before the lubricant can get into the cracks and openings. Otherwise, if the lubricant is oil, the separations will not heal; if water, it will show water marks or cracks if the water pressure is high. The intake corners are rounded off one-fourth inch, as this is the dry portion of the die. With each scale two inches wide, the best offset lies between one-sixteenth and one-eighth of an inch to the inch. Make scales one-half inch thick on the back side to withstand the pressure. The intake may be set into the bolting plate with lead, babbit or sulphur and is readily knocked out and replaced. The front scale can be made in the form of a bolting plate and lined with steel and these liners replaced when worn. The front plate and all the scales can be removed without taking the die from the machine. The scales may be held in place by set screws which pass thru the scale box. The scales are separated slightly with little tin shims or pieces of paper and the lubricating fluid allowed to pass all around those scales and pass thru at all points. Or paper shims or gaskets may be placed between the scales, making them water tight, with the paper gasket cut out at the top, so that water can pass thru at the top into the offset, and if the taper is lowest at the corners it will pass thru there first. When it gets into this offset it will then pass around the column and moisten it. If the clay pressure is less at the corners the lubricating fluid will ooze or shoot ahead at the corner. This is repeated at each offset opening.

If the pressure on the lubricating system is not high enough, the openings will become clogged. This system has been in use for over 15 years with water, under pressure. The water under low pressure was led to a kitchen boiler and steam pressure applied to the top. Regulation of the pressure was made by use of a pressure reducer and gage.

Hollow Faced Brick

Face brick set flat in the kiln sometimes come out hollow faced. This can be remedied by changing the steel liners in the end plate of the die, so that the column will have a "camel" or bow. If the column should spread at the bottom in passing over the measuring belt to the cutting table, push the liners at the bottom in to make the bottom of the column smaller.

Effect of Raw Materials on Die Working

Some clays can be mistreated in the auger machine and die and yet dry perfectly. Others must have perfect adjustment. Others can not be handled at all. Some clays require very heavy construction so that they can be run stiff while others slide thru with softer consistency.

From the troubles with cracking, ruffling or tearing back of the edges and lamination we can divide the clays and shales into two general classes: (1) The weak or poorly plastic clays which tear and ruffle easily and produce a tender, brittle column and (2) the sticky or too plastic type which slides on itself easily and produces the well known concentric layers of laminated brick. These are the two extremes, with the good-working clays lying between them. When troubled with one extreme it is advisable to look for the opposite type to mix with the original and produce the good working average. Many clays and shale banks contain both extremes and careful mixing is necessary to maintain a uniform product, or lamination from the sticky plastic type may be obtained one day and cracking from the weak sandy portion may be found the next. Other methods are known to either increase or decrease the plasticity of clays.

⁂

TO BUILD 21 BRICK BUNGALOWS

One firm that seems to have the correct idea in fighting the fire demon is the White Construction Co. of Salt Lake City, Utah. This company has taken out permits for the construction of 21 brick bungalows. These are to cost between $3,000 and $4,000 each.

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*Editor's Note—This is the third part of a paper prepared by the Pacific Northwest Clayworkers Association. In compiling it much information was obtained from the references quoted in Brick and Clay Record of September 4, 1923.

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MORE ABOUT "ENGINEER'S COMMISSIONS"

A very forceful letter, expressing very decided opinions has been received by Brick and Clay Record, in answer to a question published in this department in the last issue of Brick and Clay Record regarding the ethics of an engineer's requesting commissions for specifying certain materials. This letter denounces in no uncertain terms such engineers as "nothing but machinery or equipment brokers." The letter is published herewith.

Gentlemen:

"On page 490 of your October 2 issue, I note a very timely complaint on the part of some 'material manufacturer' about the performances of a certain party who calls himself a ceramic engineer.

"The writer is a member of one of the oldest and most respected engineering societies in this country and the code of ethics is absorbed (not taught) that commission grabbing tactics wherein technical decisions must be worked out and submitted, are about the lowest form of cheating. In former connections with some of the very large corporations in this country, the writer and many of his associates, competitors included, have had similar experiences to the one which 'material manufacturer' cites. It has been our pleasure and joy, when running up against the commission grabber who poses as a consulting engineer, to disclose to that man's clients the mercenary trail in that man's past. When such disclosures are made the client invariably dismisses the commission grabbing 'consulting engineer' as being unfit to render an unprejudiced decision wherein technical matters, —in fact the client's safety and welfare,—may be involved.

"While I have been thru these experiences many times and have handled them as above indicated, I have never before seen a published complaint in which comments are requested on the ethics of that practice. Such 'engineers' are nothing but machinery or equipment brokers and they should be forever classed as such and not called in as impartial consulting engineers."

* * *

CLAIM NEW MATERIAL STRONGER THAN BRICK

A new type of building material is to be placed on the market within a few months, following the establishment in Atlanta of a factory for the manufacture of the material, according to a recent announcement in Atlanta by Colonel James A. Gallogly, one of the organizers. He, with R. L. Langston, a well known building contractor of Atlanta, has applied for a charter for the company under the name of the Nel-Stone Co. of Georgia and Alabama.

The new product, which is to be known as Nel-Stone, was invented by W. A. Nelson. The blocks are of pre-cast monolithic concrete, and are also used as molds for a reinforced concrete filler.

According to Col. Gallogly the Bureau of Standards at Washington has thoroly tested the new tile, and found it to be about twice as strong as a brick wall. An exhibit of the material is now to be seen in Atlanta at West Peachtree and West Sixteenth Streets.

The company further advises that it is planned, when the Atlanta plant is in operation, to establish about 15 other branch plants in various sections of Georgia and Alabama.

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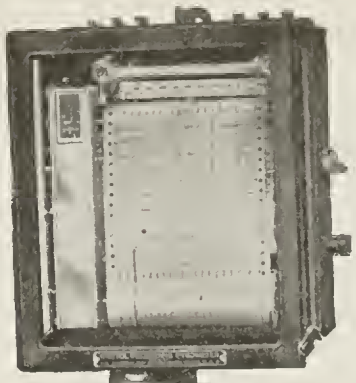

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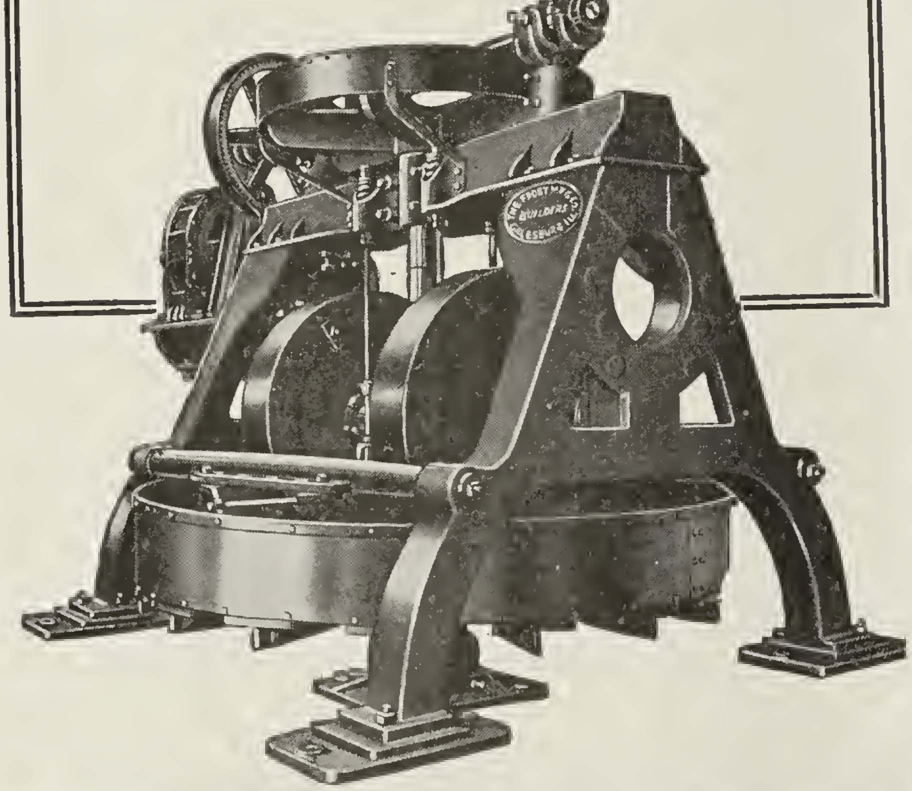

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Questions and Answers

Best Authorities in Every Clay Working Branch Are Called Into Consultation—Their Advice Is Free to You, Thru These Columns

Address all communications intended for this department to "Editor Questions and Answers, care of Brick and Clay Record," Chicago

BURNING TROUBLES AND REMEDIES

1,074. *Pennsylvania—I wish to take advantage of the opportunity offered in your publication under your "Questions and Answers Department" in order to secure some information which might be helpful to me in the burning of fire brick.*

Beginning at the drying end,—we have a steam dryer, using exhaust steam while the engine is running—about ten hours per day, and live steam the balance of the 24 hours. These dryers are not as successful as they might be, but we have taken steps to better this condition, both by means of changing the single deck cars which we are now using to rack cars, which will permit a better circulation around the brick, and by increasing the amount of radiation. On account of our dryers not being up to par we have, of course, been obliged to set our material at times when it was not thoroly dry. However, the greater part of the time the material seems to be in good shape for setting as far as dryness is concerned.

Our kilns are rectangular down-shaft type, three of them being patterned somewhat after the Wilson type of kiln, having two outlets, from the main riddle to the stack, and small riddles running from between the bag walls to the main riddle. Balance of our kilns are of older construction and have one main riddle running thru center of kiln, with one outlet to the stack and no small riddles.

Our main troubles in burning are discolored material, difficulty in getting the heat to the bottom and to the ends of the kilns at the bottom. I am not going into details of the setting, for thru talks with other operators I am convinced that our setting is properly done and that the trouble does not originate from this source. Our kilns are equipped with Brown pyrometers, and we also use trials, Orton cones and take shrinkage measurements.

After the kiln is filled and fired, we immediately plaster the doors, put on scuttles and do everything we know to secure good draft thru stack. The damper in the kiln is entirely removed. We endeavor to keep a small quantity of fire in the fire boxes during watersmoking period and keep fires bright. During the first 12 hours we raise the heat to approximately 200 degrees, and then gradually raise thru the next 24 hours to about 400 deg. and to hold the heat at about this temperature until all evidence of water in the kiln has disappeared. We make our tests by running a cold iron rod in the bottom peep hole of the kiln, and also watch the stack for watersmoke. We find, however, that in many instances after we have felt that the watersmoking period was over and have raised the heat on the kiln to 600 or 700 deg. F. that there is fresh evidence of watersmoke passing out thru the stack. Our watersmoking period runs anywhere from 48 to 60 hours.

This is the first point upon which we would desire suggestions, along the line of the time of watersmoking. We might mention here that we burn both hand made and machine made brick, but have very little trouble as far as discoloration is concerned in our hand made brick, but do experience the same trouble in getting the heat to the bottom of our kilns in burning hand made as in machine made brick. If there are any mis-steps we are taking during this stage of the burning, we would be glad to have the benefit of the suggestions to correct our error.

After we consider the watersmoking period ended, we immediately build up our fires and raise the kiln at the rate of about

200 deg. F. every 12 hours until the pyrometer reaches around 1,300 to 1,400 deg. F. At this heat we have evidence of carbon smoke and from this time on take the kiln very slowly until we have secured approximately the same heat at the bottom of the kiln as we have at the top, and the trials show evidence of about all the carbon being out of the kiln and the disappearance of the blue carbon smoke out of the stack. However, we feel that it is taking us too long to go thru this stage of the burning, as it often takes us from two to three days after we have attained a temperature of 1,300 deg. F. at the top of the kiln, to get this same temperature at the bottom. The writer believes some system of regulating dampers on the kiln might be helpful at this stage of the burning and would appreciate any suggestion along this line.

We might also add that our fires are kept bright and open all thru this stage of the burning. After the carbon period is passed, we build up our fires and run them somewhat tighter than at any time previous to this in the burning, until we get up to the heat which we find necessary to burn our ware to the proper stage. We still experience trouble getting the heat down to the bottom of our kilns even after the carbon period has been passed.

Our total time for burning is running from seven to eight days per kiln. While we would be satisfied to have an average length of time of seven days on the kiln, we are still far from satisfied on the results which we get in trying to get the heat down to the bottoms, as our kilns very often have a good top, but are soft anywhere from four to eight courses in the bottom. It very often works out that the kiln is burned on the bottom with the exception of about three to four feet from the doors on the bottom of the kiln.

This will roughly cover our burning operations, and the writer will certainly appreciate any suggestions which might show us where some operation which we are doing is not correct, or something which we are not doing that might better this situation. If there is not sufficient information given in this letter to cover what might be required, we will be glad to furnish any further information desired.

These problems were referred to Otto Springe, a graduate ceramic engineer and head burner for the last ten years at the Purington Paving Brick Co., Galesburg, Ill. Mr. Springe has replied as follows:

"Altho I am more than glad to make suggestions which I think may partly overcome some of the difficulties encountered by your correspondent, at the same time I know that you yourself can readily see the impracticability and the difficulties of criticising and offering suggestions of changes to be made or tried on a plant, the conditions of which one only knows by reading.

"What I mean to impress most is that the difficulties experienced here exist on every plant, and each plant usually finds it necessary, for various reasons, to use some certain methods particularly adapted to their clay and existing conditions to overcome them.

"1. I would suggest to determine by actual trial the rate of speed or minimum time in which the clay can be burned with safety. Assuming that the rectangular kiln is of average size, say 17 ft. x 90 ft., its capacity when set with standard fire brick might perhaps be 120,000. If it is a surface kiln equipped with grates, depending on natural draft, I would consider six to seven days' burning time quite satisfactory. Being a fire clay, it would perhaps burn without danger in less time and in a round down-draft kiln it possibly would only require four to five days. But the kiln itself must be taken into consideration, in order to obtain sufficient heat in bottom, when only natural draft is available to maintain circulation. If it is a pit kiln, that is, boxes or furnaces two or three feet below kiln floor level, one can also figure on completing burn a day faster.

"2. Would suggest that at the first opportunity I had to repair a kiln bottom, I would increase the size of main flue, making it at least 5 feet deep by 30 inches wide, providing this

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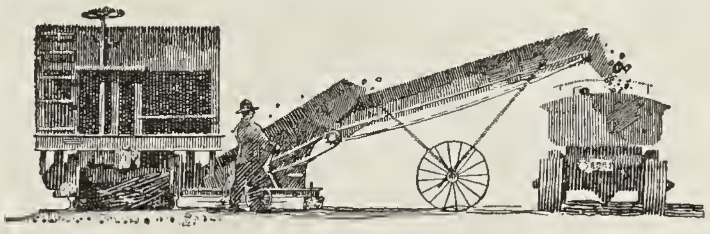

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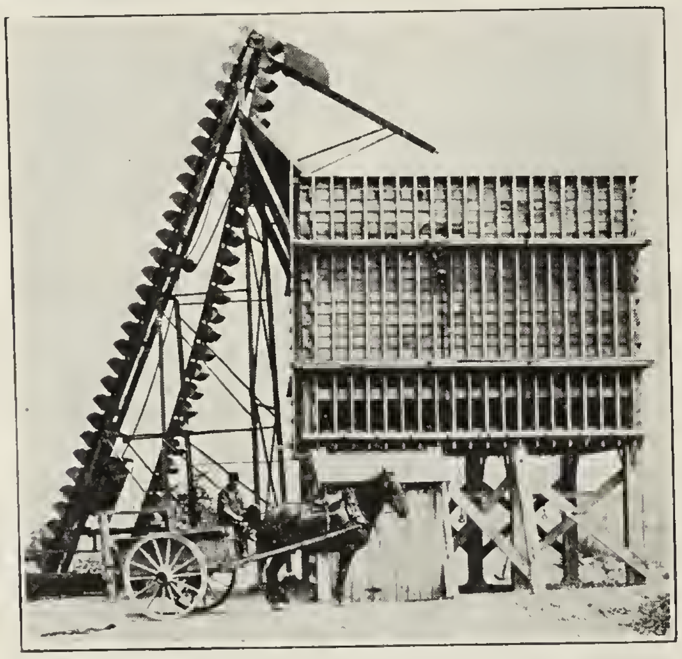

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Write for Bulletin No. 20

The Fairfield Engineering Co.
Marion, Ohio

were possible, making the ratio of flue area at the three stacks total grate area as 1 to 5.

"3. If now, kiln were dead bottom fired boxes—to increase rate of burning, I would equip same with suitable grates, thus obtaining maximum circulation.

"4. To improve the burning of the bottoms at the gables, keep slots along gable and floor openings in end sections a little more open than rest of floor, but care must be taken not to make the gable slot too large if no brick are set over same, otherwise the gases pass directly into flue, losing more heat here than if you had no opening at all.

"In all cases we assume that the brick are set bone dry, otherwise it is impossible to attempt to decrease the time of burning. If the pyrometers in this case are in top of kiln, would suggest to watersmoke at a higher temperature, raising it to 750 deg. F. in 36 hours, in which time watersmoke would probably disappear at stacks, then by 72 hours, or after three days, have kiln temperature on top from 1,300 to 1,400 deg. F., which I would maintain until oxidation was complete. Until now keep dampers open. If kiln has higher draft, after flue showed red, would suggest decreasing draft, increasing my kiln temperature after oxidation was complete, to settle heat on top as fast as possible.

"The probable reasons for discoloration of the machine made brick, when dried, set and burned under same conditions, at which hand made brick did not discolor, is due to press oils used in either lubrication at die or cutter."

A. V. Bleininger, head of the research department of the Homer Laughlin China Co., and probably the best informed man today on ceramics in this country, has also some suggestions to make. He says:

"I was glad to read the copy of the letter which you forwarded to me. I would say that the gentleman's process of watersmoking might be hastened if there is enough draft available. He does not say anything about the size of the stack or whether it is used in connection with the other kilns so that it is fairly hot when one kiln is being watersmoked. It is here that many people lose much time, when this stage of the firing should not take more than 36 hours.

"After the watersmoking, the firing could be pushed somewhat faster than he does up to 1,300 degrees. It is suggested also that he oxidize at a somewhat higher temperature, say, 1,475 deg. F. By keeping the fires bright and clean he should save considerable time by carrying thru the oxidation at the higher temperature mentioned.

"The difficulty to get the bottom of the kiln hot is due to either of two causes: The draft is either insufficient or it is too strong. The difficulty due to the first condition is obvious, while in the second case the heat is being removed from the bottom too rapidly. The second case is a very common one and should be remedied by tightening up the kiln bottom. The idea of trying to regulate the draft entirely by means of dampers is hopeless. Regulation can be had only with a sufficiently tight bottom. The partial stopping up of the midfeather flues leading to the main flue is frequently an excellent means of bringing about sufficient resistance to prevent too much heat from being removed.

"Your correspondent should be able to cut down the time of burning at least one day by preventing the excessive loss of heat thru the bottom. He should be in position to fire the brick sufficiently hard at least to the last two courses."

A. F. Greaves-Walker, formerly production manager for the American Refractories Co. and now vice-president of Stevens Bros. & Co., Stevens Pottery, Ga., was consulted and offered suggestions for overcoming the troubles. Mr. Greaves-Walker says:

"It is extremely difficult to diagnose this case on account of lack of details which undoubtedly have a considerable bearing on the situation.

"After reading this correspondent's letter, I am convinced that the main difficulty is due to incorrect kiln design. No fault can be found with the burning methods and if the kilns were properly designed and in good physical condition, they would get good results with the process used. One of the things that they should be extremely careful about is to see that their brick are set absolutely dry. Unless they do this they cannot expect to get improved results. Even if they have a small amount of moisture left in the brick, the bottom courses will absorb the moisture driven out of the top courses after it passes thru them and this naturally makes the bottom lag behind.

"They might overcome some of their difficulty by setting the center of the kilns and the entire tops above the top of the bag walls tighter. The effect of this would be to force the fire gases to the bottom close to the bag walls and thereby compel them to travel close to the bottom in reaching the center flue.

"The fact that their hand made brick are of clearer color than machine made would indicate that the machine made are generally set in a wetter condition. The machine made are naturally denser and lose their moisture slower and also oxidize slower. As a general rule machine made brick are not of as good color as the hand made, but there should be no great difference.

"If the kilns are old, it is possible that air leaks thru the walls and thru the bottoms of the bags under the grates are seriously affecting both the draft and the temperature in the kiln bottoms. This should be looked into."

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

BABCOCK SUCCEEDS OFFILL AT LACLEDE

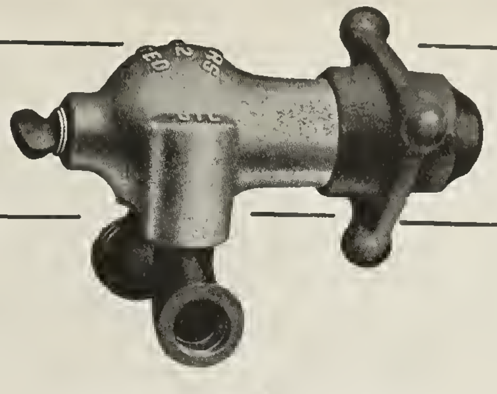
M. G. Babcock, formerly sales representative of Laclede-Christy Co. of Pennsylvania, has succeeded P. M. Offill as head of the Pittsburgh Office of the LaClede-Christy Clay Products Co. of St. Louis. Mr. Offill resigned from this position. Mr. Babcock's offices will be located at 901 Oliver Building, Pittsburgh, Pa.

W. H. ERSKINE JOINS KRUEGER FORCES

Changes and additions to the official family of the Cleveland (Ohio) Clay Products Co. continue to be made by Leo A. Krueger, president and general manager of that firm. The latest entry is W. H. Erskine, who becomes a valuable addition to the organization, since he has spent practically a life time in the brick business and is considered an authority on both the manufacture and sales of face brick particularly. Mr. Erskine was associated with the Hydraulic-Press Brick Co. for 15 years and has had other equally prominent connections.

J. J. KLOESS DIES OF APOPLEXY

John J. Kloess, 60 years old, a member of the Kloess Brick Co., at Belleville, Ill., died recently at his home in that city. His death was due to apoplexy, caused by excitement when fire broke out in the plant of the company. When the fire was discovered by employes they notified Kloess by telephone. He hurried to the plant, which was near his home. The fire was not as serious as the employes feared it would be and the fire department soon had it under control. In the excitement Kloess was forgotten and after the fire had been extinguished an employe found him by stumbling over his body in the brickyard. He had been prominent in the



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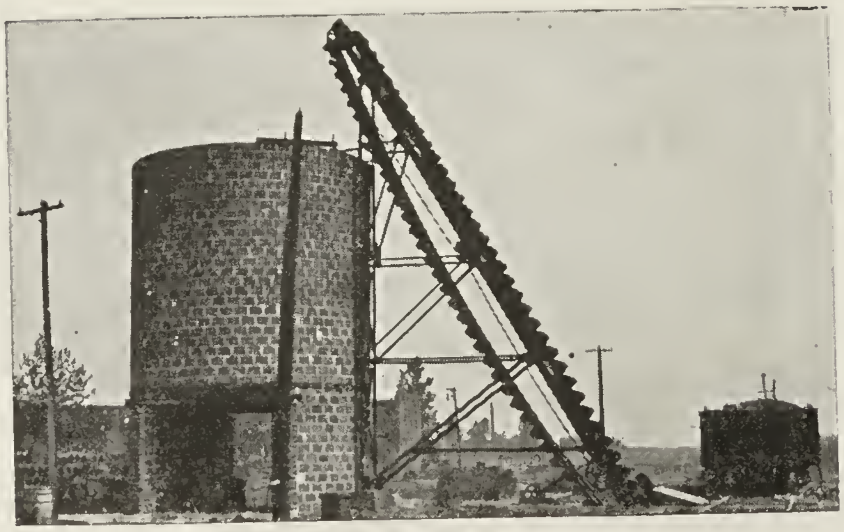


manufacturing field of Belleville for many years and his brick plant was one of the oldest in that section of the state.

PELL CITY PLANT ALMOST READY

The new plant being constructed at Pell City, Ala., by H. S. Teal will be completed within the next 30 days and will probably start manufacturing operations early in November, according to announcement by Mr. Teal recently. Machinery is now being installed.

BAUXITE COMPANY IN LITTLE ROCK

The Arkansas Bauxite Products Co. has been incorporated in Little Rock, Ark., with C. D. Hyten as president and George W. Goodman as secretary and treasurer.

NEW COMPANY AT POMONA, CAL.

A five-acre factory site has been purchased by the Pomona (Cal.) Tile Manufacturing Co., a report states. Actual work on the plant will be started within two weeks. The officials of the company stated that they would have the plant built and equipped within 90 days and would start with a daily production of 2,500 square feet of tile. The company is incorporated under California laws with Judson F. Clark, of Pasadena, Paul C. Boving, Pasadena, George A. Lathrop, Bert I. Cooper and E. D. Westrip, of Pomona, as the five incorporators. The main factory building will be 100x50 feet, one story in height. The capital stock is $100,000.

BRICKLAYING CONTEST AT PICNIC

At the recent picnic of the Builders' Exchange in San Francisco, Cal., the master tilelaying contest proved most exciting. It was given under the auspices of the California Brick Co., the attraction being cash prizes offered by N. A. Dickey, president of the company. Nine contestants entered the race amid the cheering and prompting of friends, who kept them posted on the progress of their rivals. The first prize of $50 was won by Harold Larson; the second of $20 by Jerry Collins; the third was tied by three, so each was given $10.

Almost if not quite as exciting was the ladies' bricklaying contest. First prize was won by Grace Perego, the only lady contractor in the Builders' Exchange. The second by Mrs. N. Larson. The judges deduced three rules from the contest employing lady bricklayers. First, the contractor must furnish gloves to his bricklayers to prevent blisters. Second, the brick must be made smaller for easy handling. Third, the wall must be started three feet from the ground to avoid backache.

FORM COMPANY IN CONNECTICUT

The Connley-Purinton Brick Co., Newington, Conn., recently organized with a capital of $50,000, to operate a local brick manufacturing plant, has elected John H. Connley president and treasurer, and Fred E. Purinton, residing at New Britain, Conn., secretary. B. F. Gaffney, of the last noted place, is also interested in the new company. Extensive operations are planned.

FORM TUSCO BELT BRICK CO.

The Tusco Belt Brick Co., to manufacture brick and clay products, has been incorporated with a capital of $100,000, it is reported. Franklin L. Mettler, M. E. Mettler, P. M. Gilkey, of Wilmington, Del., are named as incorporators. F. L. Mettler, Wilmington, Del., is agent.

GEORGIA PLANT BUYS 250 ACRES

Officials of the Columbus (Ga.) Brick & Tile Co. advise that this company has recently acquired by purchase a tract of property containing about 250 acres, and will develop the property in connection with the operation of the company's large brick plant at Columbus. The plans are understood to include increasing the present capacity of the plant, and other improvements.

BRICKLAYERS' SCHOOL AT ATLANTA

The Atlanta, Ga., public school system is preparing to start at an early date night school trade classes in bricklaying, plastering, masonry, and so forth, as a part of the present system, which includes a number of skilled trades. The courses to be inaugurated in bricklaying, masonry, and so forth, have been made possible thru the cooperation of the members of the Atlanta Builders' Exchange, including virtually all of the brick manufacturers in the city who have donated the money needed for the purpose.

HYDRAULIC TAKES OVER LACON PLANT

The Lacon (Ill.) Clay & Coal Co. has been sold and the entire property taken over by the Hydraulic-Press Brick Co. of St. Louis, Mo., it is reported. The new firm is already in charge of the business, which is its 25th plant in the middle west.

ENTERTAINS SPRINGFIELD ENGINEERS

The Springfield (Ill.) Paving Brick Co., 2700 East Ash Street, had members of the Springfield Engineers Club as its guests recently on a tour of inspection of the plant. Luncheon was served at noon and the members then saw brick in the process of manufacture. W. P. Whitney, president of the company, extended the invitation to the technical group.

EMBRYO CR. E.'s MEET

The student branch of the American Society of Ceramic Engineers held its first smoker recently at the Union Building, Urbana, Ill., and a score of students enrolled for these meetings. Regular programs will be given thruout the year and the American Society will extend its services and influence to aid pupils and bring them in touch with the practical problems of their profession.

HENRY BRICK CO. TO OPEN SOON

The Henry Brick Co., engaged in the brick manufacturing business at 2825 Massachusetts avenue, Indianapolis, will reopen its plant in the near future, it is reported.

INDIANA GETS NEW COMPANY

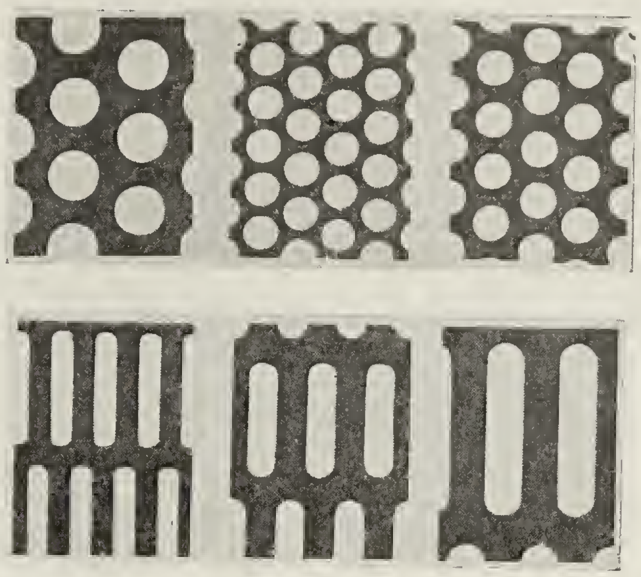
The Crothersville Clay Products Co., capitalized at $10,000, has been incorporated to manufacture tile, brick and other clay products at Crothersville, Ind. The incorporators are James Ritz, Clyde Cravens and Edward Krause, all of Crothersville.

WORKS 100 PER CENT. DESPITE STRIKE

An echo of the clay workers' strike in West Terre Haute, Ind., which took place about a year ago, when employes of the Vigo-American Clay Co. plants walked out, came recently in the form of a statement from some of the former employes of the company, who are still on strike. The men claim that a rumor has been started in West Terre Haute to the effect that the national president of the clay workers had called the strike off, and this rumor was disclaimed by union officials, who maintain that the strike is still on.

H. C. Stockel, of the Vigo-American Clay Co., which is the only organization affected by the strike, when asked about the proposition, said he saw no reason why the matter should be brought up at this time as both the plants of the company were working full capacity and he had considered the issue closed.

Perforated Steel Screens



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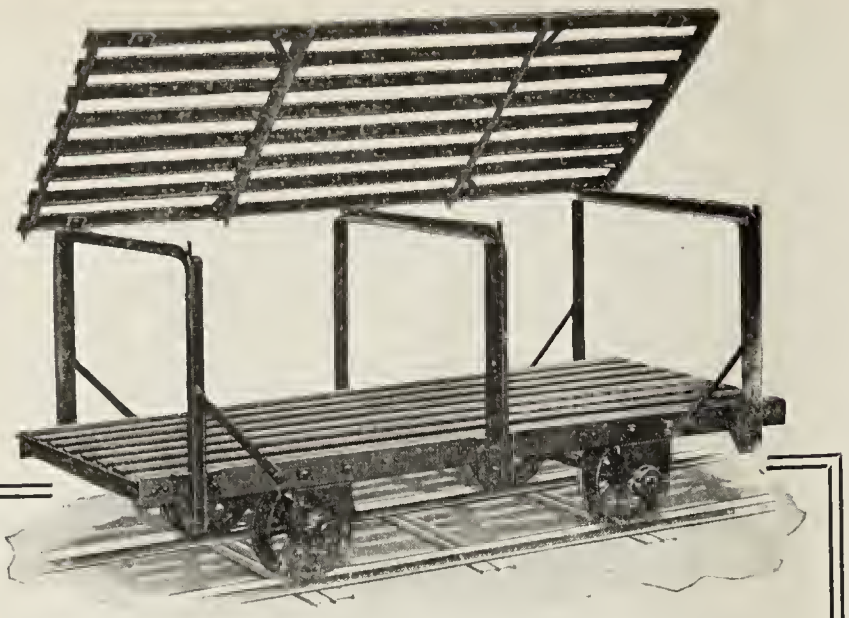

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Thwing
PYROMETERS

146

GETS REDUCED FREIGHT RATE

The traffic department of the Terre Haute, Ind., Chamber of Commerce has received word that its appeal to the interstate commerce commission in behalf of the Terre Haute Vitrified Brick Co. of that city, regarding rates between Terre Haute and points in Kentucky, has received favorable action.

The case came up when the Terre Haute Vitrified Brick Co. bid on a contract for one million brick to be shipped to Morgantown and Sturgis, Ky. The price quoted by the company for its product was sufficiently low to get the contract, but the freight rate was $3.60 per ton, which brought the price of the brick so high as to prevent the contract from being accepted. With the new rate, which is $2.80 per ton, the Terre Haute company was enabled to secure the contract.

INDIANA BACKS DANVILLE IN RATE CASE

An intervening petition has been filed by the Indiana state Chamber of Commerce with the interstate commerce commission in behalf of the efforts of the Western Brick Co., of Danville, Ill., for lower rates on brick and allied products to points in Illinois, Wisconsin, Michigan, Minnesota and South Dakota. The Danville complaint alleges that rates from other Illinois brick producing points are preferential and that the rates from Danville are prejudicial and discriminatory.

A decision in favor of the Danville company would open the northwest to Indiana brick manufacturers located at Brazil, Terre Haute, Crawfordsville, Carbon, Veedersburg, Hillsdale, Clinton and West Montezuma, because they are contiguous to Danville territory. It would enable the western Indiana group to enter into competition with the Illinois manufacturers named in the Danville petition and located at Chicago, Streator, Galesburg and Springfield as having lower rates.

EDGINGTON TO BUILD $250,000 PLANT

E. M. Edgington, 520 Carter Ave., Ashland, Ky., is going to build a modern high grade face brick plant at Mt. Savage, Carter County, Ky., 21 miles from Ashland. This plant will cost approximately $250,000, being financed by Huntington, W. Va., and Ashland capitalists. Mr. Edgington will design the plant and will act as superintendent when it is completed. He is anxious to communicate with manufacturers of machinery and equipment.

MAY BUILD PLANT AT CAMDEN, ARK.

W. D. Rowell of Minden, La. has been in Camden, Ark. looking into the matter of establishing a large brick manufacturing plant there. Camden is said to have an almost inexhaustible supply of high grade brick clay adjacent to that city; they have excellent transportation facilities and the choice of oil or gas for fuel. These advantages, together with the great demand for brick in that immediate territory, extending as far as Memphis, Tenn., makes the proposition a very attractive one, according to Mr. Rowell.

BUILDING PLANT AT LEWISTON, ME.

T. F. Moreau of Lewiston, Me., is constructing a brick plant at Danville Junction, Me., which is expected to turn out 3,000,000 brick per annum and employ about 30 persons.

DEVELOPS HIGH GRADE FIRE BRICK

The Savage Mountain Fire Brick Co. of Frostburg, Md., after a series of extensive and exhaustive experiments is believed to have produced a high-grade hand-made brick that will give maximum service in oil heating furnaces. The series of experiments were carried out over a long period of time, in conjunction with R. M. Howe, formerly Senior Fellow of the Refractories Manufacturers' Association at the Mellon Institute of Industrial Research, Pittsburgh, Pa.

The brick is much denser than the one formerly used, will stand a heat of approximately 3,300 deg. F., and will show a negligible amount of expansion and contraction, it is said. It is named "S. M. Extra" and in its manufacture it goes thru double grinding and double tempering.

NEW COMPANY IN BOSTON

With a capital of $100,000, the A. J. Rogers Co., Boston, Mass., has been incorporated. The incorporators are Alfred J. Rogers, Winthrop; Mildred Rogers, Winthrop; and Elizabeth F. Dolan, Avon. The company will manufacture brick, it is stated.

INSTALLS NEW LOCOMOTIVE

The Walsh Fire Clay Products Co. has installed another locomotive engine and a number of new freight cars at its plant in Jonesburg, Mo. These, with its two steam shovels, will enable the company to load from ten to twenty cars per day, when running full force.

WILL NOT BUILD PLANT

James P. Williams, who was at the head of a company that was planning to erect a new brick factory at St. Charles, Mo., has notified the Chamber of Commerce of that city, thru whom he was negotiating, that the company will not locate the plant there at present. Williams said that owing to the high cost of materials and labor, after making inquiries in several communities, the projectors had decided to abandon the proposal for the present. Under the plans submitted to the Chamber of Commerce the company was to erect a plant at a cost of $50,000 and asked that the people of St. Charles take a minority interest in the project.

GREEN GIVES MEN BONUS

October 1 was bonus day for the employes of the A. P. Green Fire Brick Co., Mexico, Mo. The yearly bonus was received by between 500 and 600 men in the two factories. The bonus checks in many cases were for $55 to $60. The yearly bonus is paid for continuous employment with the A. P. Green company. Payment is based on a certain rate per hour for all hours worked and the same rate per hour applies to all classes of labor—from common labor to skilled mechanics. It is paid to men who work on an hourly basis.

This is the first payment of the yearly bonus and the plan will be continued, payment being made on October 1 each year. Time away from work, time taken by vacation, sickness or for similar causes does not in any way affect the bonus standing. Even those men who have been at the plant but a short time received a bonus for the time they have been continuously employed by the company. This yearly bonus is entirely separate from the weekly bonus that is paid all hourly men. The weekly bonus is paid each Saturday noon to men who work full time during the week covered by the pay check. Both bonuses are entirely separate and above the regular hourly scale of wages paid to employes.

PLAN COMPANY FOR MISSOULA, MONT.

Anton Vogt and others of Missoula, Mont., propose forming a company and establishing a brick plant at that point. Tests of the clay have proved to be very satisfactory, and a location where clay and coal are near together can be secured.

BUY PLANT AT TEKAMAH, NEB.

Harry Smith, who has been at the head of the McCook (Neb.) Brick Co. the past year and a half, coming to McCook from Omaha, resigned as manager of that institution recently, his resignation became effective October 1. The Smith Brick Co. of Omaha, of which Mr. Harry Smith is a member, has purchased the brick and tile plant at Tekamah,

Made for maximum service not merely the average

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Jenkins Bros

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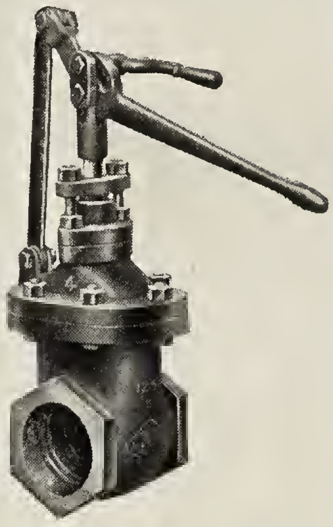

Fig. 334, screwed, Standard Iron Body Quick-Opening Gate Valve with sliding stem and lever.

Jenkins Gate Valves with sliding stem are quickly opened or closed by a pull of the lever attached to the stem. The small lever is used to hold the gate at any desired position.

These are handy, time-saving valves on lines where a quick full flow is desired and where the valve must be worked very often.

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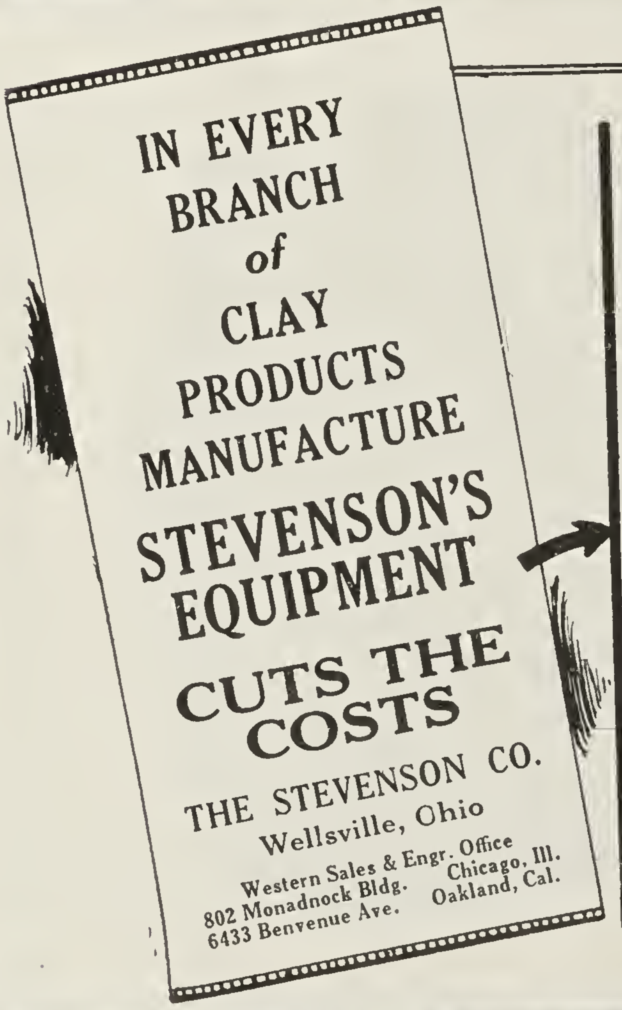
The Standard Belt of the World

MANHEIM MANUFACTURING & BELTING CO.
MANHEIM, PA.



IN EVERY BRANCH of CLAY PRODUCTS MANUFACTURE
STEVENSON'S EQUIPMENT
CUTS THE COSTS

THE STEVENSON CO.
Wellsville, Ohio

Western Sales & Engr. Office
802 Monadnock Bldg. Chicago, Ill.
6433 Benvenue Ave. Oakland, Cal.

Dry Pans
Wet Pans
Roll Crushers
Sewer Pipe Presses
Sewer Pipe Turners
Tile Presses
Press Feeders
Crusher Feeders
Pan Feeders
Bucket Elevators
Gravity Elevators
Brick Barrows
Tile Barrows
Sewer-Pipe Barrows
Gigs,
Etc.

STEVENSON

Neb., which has a larger capacity than the McCook plant, to which place Mr. Smith expects to move. Mr. Smith is a practical brick and tile man, being reared in the profession. He says the company will specialize in hollow tile at Tekamah.

FORM TILE COMPANY IN BROOKLYN

The Gray Tile Corporation, Brooklyn, N. Y., has been incorporated with a capital of $25,000. The incorporators are F. and G. Gray and C. Markie. J. T. Booth is the attorney.

FORM NEW YORK COMPANY

C. T. Roe and L. I. Whitestone have been named as incorporators of the A. S. Reid & Co. of New York, Inc., Manhattan, N. Y., manufacturers of clay products, tile, pipes and so forth, with a capital of $100,000.

WILL ERECT PLANT IN PAULSBORO

The Cooperfield Brick Corporation of New York is preparing to build a main office, factory and warehouse on the property bought along the Mantua creek, Paulsboro, N. J., known as the Henry Cooper farm. The property has been inspected by experts and declared to contain excellent clay.

HAS TROUBLE GETTING LABOR

F. F. Gardner of Kingston, N. Y., reports that business is slow at the present time. This is principally due to the fact that labor is hard to obtain and there is a shortage at the plant. Mr. Gardner is considering installing motors to replace his steam power plant.

BETHESDA CLAY PRODUCTS CO. FORMED

The Bethesda (Ohio) Clay Products Co. has been chartered with an authorized capital of $50,000 to manufacture brick, tile and other clay products. Incorporators are C. B. Mayhugh, Nathan Shepard, H. A. Bolon, O. G. Clethero, Chas. M. Garrett, H. L. Thrall and C. W. Lynn.

COMPANY FORMED AT EIFORT

The Morgan & Horton Clay Co., Eifort, Ohio, has been incorporated with a capital of $30,000 to operate clay, shale, limestone and coal properties. Incorporators are Moses Morgan, Jas. W. Morgan, Elizabeth Morgan, Ed. Horton and Earl C. Horton.

OHIO ADDS ANOTHER

The Buckeye Shale Brick Co., Wickliffe, Ohio, has been chartered with an authorized capital of 2,000 shares, no par value, designated to mine, sell and deal in clay, shale, sand, coal and other minerals. Incorporators are M. E. Kundmiller, Jean B. Clyde, Ralph W. Edwards, Patrick D. Collins and A. K. Strong.

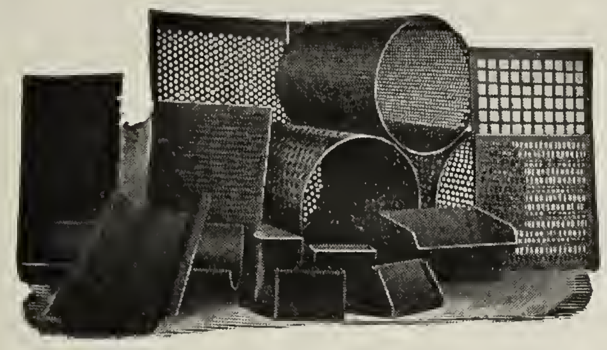
TO ISSUE BONDS FOR IMPROVEMENTS

A special meeting of the stockholders of the Tri-State Brick, Tile & Coal Co., was held at 16 North Third St., Columbus, recently for the purpose of authorizing the issuance of $150,000 first mortgage bonds on the property which is located near Ironton in Lawrence County, Ohio. A portion of the money to be received from the issue of bonds is to be used to pay off indebtedness and the remainder for improvement at the brick and tile plant as well as the coal mine.

CELEBRATES 32ND ANNIVERSARY

The thirty-second anniversary of the Cleveland (Ohio) Builders' Supply & Brick Co., was celebrated by the 250 employes with an outing at the Cleveland Yacht Club, recently. All sorts of sports and games were indulged in,

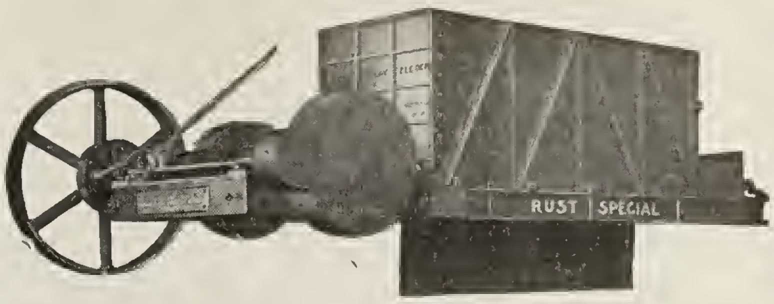
HENDRICK SCREENS
FOR ALL PURPOSES



ELEVATOR BUCKETS
CONVEYOR TROUGH and FLIGHTS
STACKS, TANKS,
GENERAL SHEET and
LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL
PLATE CONSTRUCTION

Ask for your copy of the
Perforated Metal Handbook

HENDRICK MFG. COMPANY
CARBONDALE, PA.
NEW YORK OFFICE: 30 Church St.
PITTSBURGH OFFICE: 544 Union Trust Bldg.
HAZLETON, PA., OFFICE: 705 Markle Bank Bldg.



Improve Your Mix
with the
MARION
"RUST SPECIAL"
Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing Rust Feeder and full line of Marion clay plant equipment.

Marion Machine Foundry & Supply Co.
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MARION, INDIANA

A COMPLETE SERVICE

Buyers of New and Relaying Rails and Track Accessories realize that FOSTER'S complete warehouse stock means immediate shipment, attractive price and their complete requirements from one source.

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ROBERTSON-PEASE CO.
CENTURY BUILDING CLEVELAND, OHIO.
ENGINEERS

We offer our services, as your engineers, on the design or construction of:

Tunnel Kilns.
Periodic or Compartment Kilns.
Insulation of Existing or New Kilns.
Fuel Systems.
New Plants and Re-Conditioning of Old Plants.

Special Installations for your particular product.

ENGINEERS
ROBERTSON-PEASE CO.
CENTURY BUILDING CLEVELAND, OHIO.

No Labor Worries with a
BAY CITY
EXCAVATOR

The Mohawk Brick Company, Mechanicsville, N. Y., installed a Bay City Excavator early this spring. They write as follows:

"We are very well pleased with the machine. It is inexpensive to operate, doing all the work which we want it to do, and we realize that if this machine had not been installed this spring, we would have had considerable difficulty in digging our clay owing to the present labor conditions.

"We recommend the machine very highly."

The labor-saving factor alone should warrant your full investigation of the Bay City Excavator.

Write for complete details

THE BAY CITY DREDGE WORKS
BAY CITY, MICHIGAN
New York Office—154 Nassau St.

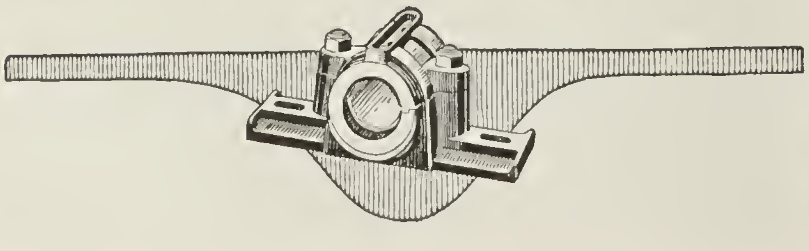
GEARS

SMOOTH running; correct in design, accurate and true to pitch, Caldwell gears are bound to please you. We make all types—machine-molded, cut tooth, mortise gears, worm gears, etc. Caldwell Promptness is Traditional. It is at your service. Our stocks assure prompt shipment.

Let us figure with you next time you are in the market.

H. W. CALDWELL & SON CO. LINK-BELT COMPANY, OWNER
Dallas, Texas, 709 Main Street—Chicago, 17th Street and Western Ave.
New York, Woolworth Bldg.

CALDWELL



including a baseball game, sack races, pogo stick races, pipe race, peanut race, clothespin race and baseball throwing for ladies. After dinner the evening was devoted to presentation of prizes and dancing.

MEDAL PLANT TO ELECTRIFY

Electrification of the Carrolton, Ohio, plant of the Medal Paving Brick Co., Cleveland, Ohio, has been started, and within a few weeks the change from steam to the newer motive power will have been effected. Greater efficiency in production will follow, assuring still further the promptness for delivery upon which the Medal prides itself. All plants of the Medal have been operating to capacity, and a nice winter's business is in prospect, according to C. G. Deckman, energetic manager.

COLUMBUS FACE BRICK DEMAND OFF

Face brick demand in Columbus and Ohio territory is showing a decline which is believed to be purely seasonal. Prices have not declined and on the whole are holding steady at former levels. Face brick at the plants vary from $24 to $38 per thousand depending on shade, texture and method of burning. Common brick sell around $16.50 to $18.50 delivered on the job. There is a plentiful supply of common brick at present altho the supply is not large enough to affect the prices to any extent.

FRANKLIN BRICK & TILE AND BURTON-TOWNSEND COMPANIES TO BE SOLD

Receivers Samuel A. Kinnear and Arthur M. Crumrine for the Franklin Brick & Tile Co., of Columbus, Ohio, and also for the Burton-Townsend Co., of Zanesville, Ohio, two R. L. Dollings Co. subsidiaries have completed inventories of both properties preparatory to offering them for sale at receivers auction. The plant of the Franklin Brick & Tile Co., located just east of Columbus is appraised at $683,279. This plant which has been operated under A. C. Shepard as superintendent has been manufacturing common brick. Operations were stopped temporarily October 8 because of a large accumulation of stock. The above inventory does not include all of the brick on the yard which has been increased materially since the taking of the inventory.

The two plants of the Burton-Townsend Co., located near Zanesville have been appraised at $1,141,663.79. In the inventory of this plant only a small amount of paving brick was included and this has been increased by manufacturing for the past month. Receiver Samuel A. Kinnear says that the product of these plants has been sold up to January 1 if not longer. Steps will be taken soon to secure an order of sale from the court and the date will likely be set some time in December.

SAVAGE MOUNTAIN INCREASES CAPITAL

Savage Mountain Fire Brick Co. has been authorized to increase its capital stock to $100,000.

TO OPERATE OLD BRADY'S RUN PLANT

The Colonial Clay Products Co., Bridgewater, Pa., has been formed with a capitalization of $125,000 and has obtained a charter to operate the old Brady's Run plant of the Pennsylvania Clay Co., it is said, which the new concern has purchased. The purpose of the concern will be to produce clay and clay products. Those whose names appear as incorporators are S. E. McFetridge, of Beaver Falls, William G. Fisher, of Rochester, and Emmett E. Harper, of Fallston, Pa.

TO FLOAT $500,000 BOND ISSUE

A $500,000 bond issue is to be floated by the Savage Fire Brick Co. of Keystone Junction, Pa., it is reported. This

No. 300, $7.80 per doz. $90 per Gross Pair

FREE

To any manufacturer whose men have not been using Des Moines Hand Pads who will clip out the Hand Pad shown here and mail it to us with his letterhead we will send FREE a pair of Des Moines Pads.

Spike The Tendency Toward Dissatisfaction

Men can't, and in these days don't have to, work under disagreeable conditions.

Sore hands can't work efficiently. Supply your men with Des Moines Glove Company hand pads and curb unrest among your laborers.

No. 305
$4.25 per Doz.
$48 per Gross Pair

DES MOINES GLOVE
& MANUFACTURING CO.
DES MOINES, IOWA

On an ERIE one man can do both the operating and firing, when the output required is not more than 200 to 300 cu. yds. a day.

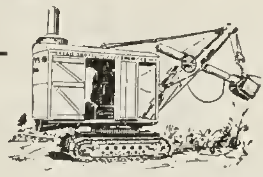
"The ERIE increased our output 10%"

—"and OUR DYNAMITE COSTS HAVE BEEN CUT TO 1/3 of what they were before. The savings in labor and dynamite, alone, paid for the ERIE in its first year. It has given entire satisfaction." *—F. B. McFarrin, Gen. Mgr., Interprovincial Brick Co. of Canada, Inc., Toronto, Ont.*

For a reliable supply of raw material—you need an ERIE. Owners will tell you that the ERIE Shovel costs only 1/3 as much for upkeep, and saves 65 per cent. of the time ordinary shovels are tied up for repairs.

It pays to use equipment that is RELIABLE. Read the records made by 48 ERIE Shovels in clay, shale, rock, etc.—write for Bulletin B-70.

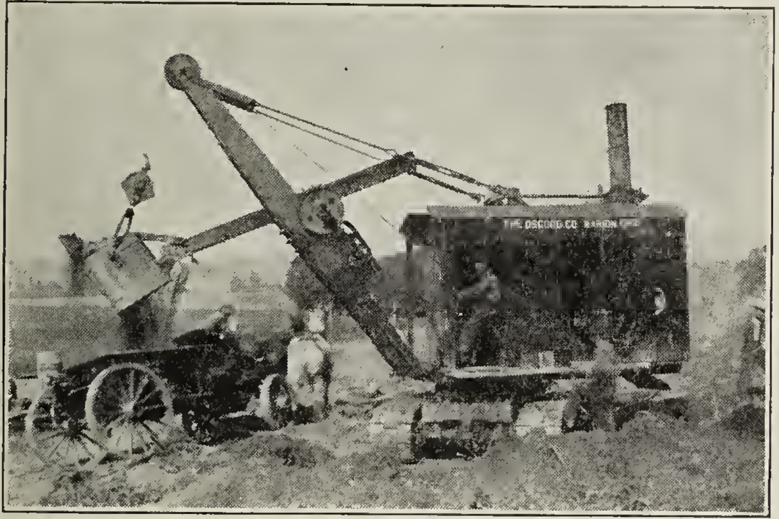
ERIE STEAM SHOVEL CO.,
Erie, Pa., U. S. A.
Branch Offices: Boston, New York,
Phila., Pittsburgh, Atlanta, Chicago
Representatives throughout the U. S. A.



For working in a muddy pit, or traveling over rough ground—use the ERIE *lubricated* caterpillar type mounting. It saves considerable time, eliminating the need for planking under the shovel.

Many other advantages of this *fully lubricated* mounting are interestingly described in our Bulletin B-60. Write for it.

ERIE Revolving Shovels



An OSGOOD Keeps the Dirt Moving

TIME IS GOLDEN

Beautiful autumn days will soon give way to winter. Speed up that delayed construction job with an OSGOOD Steam Shovel, and avoid cold weather tie-ups by finishing the job on time this fall.

There is an OSGOOD for every excavating need. Ask for latest Bulletin.

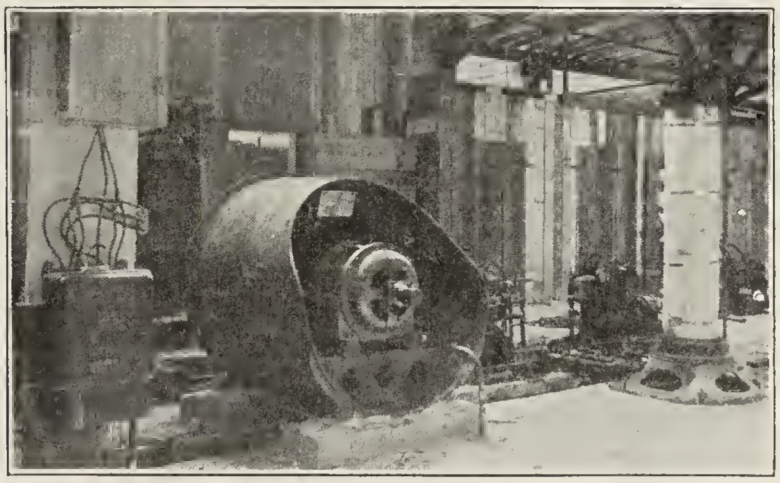
¾—1—1¼ Yd. Revolving Steam Shovels, Clamshells, Draglines and Cranes.

1½ to 6 yd. Railroad Type Steam Shovels.

Continuous Tread, Traction or Railroad Mountings.

The OSGOOD Company
MARION, OHIO, U. S. A.

Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

Ask for information regarding T-J System of Burning Oil.

Tate-Jones & Co. inc.

Furnace Engineers Established 1898

PITTSBURGH, PA.

New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis

THE MINTER SYSTEM

——200 Lbs. Coal per Ton of Ware——

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. Saving first cost of 6 tunnels and equipment.

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

DON'T BUILD BEFORE YOU KNOW

The Minter System Plants are Producing the Cheapest Building Material made in America today.

The Minter System

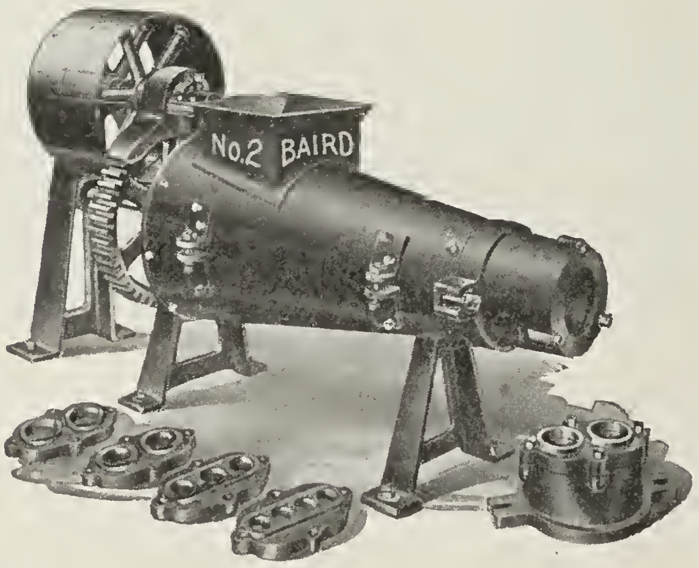
HOME OFFICE
Albany, Georgia

BRANCH OFFICE
215 Doctors Bldg.
Columbus, Georgia

BAIRD

Cut of No. 2

PUG MILL



BAIRD PUG MILLS are giving excellent service in potteries of every description, domestic and foreign plants included. Special features consist of Bessemer steel body, square shaft equipped with cast steel blades, sturdy construction thruout, initial cost and upkeep exceptionally low.

ANDREW BAIRD

Designer - Manufacturer - Pottery Machinery

409-10 Burns-Gray Building, Detroit, Mich.

money is to be used in rebuilding the plant which was damaged by fire six or seven years ago and which has since remained closed. The plan calls for the operation of the plant on a larger scale than ever before and the facilities and capacities of the company's three plants at Keystone Junction, Williams and Hyndman, Pa., will be enlarged. The bond issue above mentioned will be used partly to make the improvements and partly to retire the present outstanding bonded indebtedness. When rebuilding operations are completed, the complete plant will have a combined capacity of 160,000 brick per day, it is said. The company has been reorganized with C. B. Young as president, S. J. McClune, vice-president and F. W. Minch, secretary-treasurer. C. B. Young is president of the Central Refractories Co. of Pennsylvania and Ohio.

NEW COMPANY IN COLUMBUS, S. C.

The Denmark Brick Co. has been incorporated in Columbus, S. C., with a capital stock of $20,000, with C. F. Rizer as president and G. M. Neeley, secretary.

HUNTINGDON, TENN., WANTS CLAY PLANT

Some progressive citizens of Huntingdon, Tenn. have had the matter of establishing a brick and tile plant in that city under consideration for several weeks and have made investigations as to the probable cost of the plant and the character of clay suitable for the manufacture of brick and tile. They think that clay well adapted to this enterprise is convenient to Huntingdon. It is estimated that the plant will cost something like $8,000 or $10,000 and a stock company will be organized to put up the funds and to manage the business. The large number of drainage districts in the county have opened up the need for drainage tiling and when the tiling can be secured without the extra cost of freighting it from a distance, the demand will be largely increased, it is thought.

AMARILLO PLANT EXPANDING

The Amarillo (Tex.) Brick Plant, which was established about a year ago, is expanding because of the demand for its brick. The plant uses natural gas and has a pipe line to the gas field.

MOVES GENERAL OFFICES

O. L. Smith, manager of the Groesbeck Standard Brick Co., has moved his general office to Palmer, Tex., sharing office room with A. M. Smith, manager of the Standard plant there. Brick made at the Palmer plant are shipped over most of the states of the union. The plant is working at a capacity speed just now.

TEXAS PIPE COMPANY SUCCESSFUL

Altho it has been established only 12 months ago, the Gulf Coast Pipe Co., Inc., located at Houston, Texas, will soon commence the erection of a large two story building to care for increasing business. The company is considering the advisability of manufacturing other clay products, in addition to sewer pipe. New equipment and machinery will be added.

Much of the sewer pipe used in Houston's program for extending the sanitary and storm sewer systems was the product of the Houston concern, which was incorporated March 1, 1922, with N. E. Epps, H. G. Fields, and Winfree Weslow as the principal stockholders.

NEW COMPANY IN WASHINGTON

The Tacoma (Wash.) Tile & Brick Co., has been incorporated with a capital stock of $50,000. John Buffelen, Margaret Buffelen, George Brewer, Irving H. Bertke and Louis Mickelson are named as incorporators.

FLEXCO
TRADE MARK
Lamp Guards

You'll Soon Need Guards

Guard every lamp that is in danger of breakage or unauthorized removal. Protect yourself from losses and accidents. Flexco and Flexco-Lok [patent locking] guards cost less than new lamps. Last for years.

Expanded metal reenforced construction. Attractive in appearance. Very rigid and strong. Made with key locking or plain round head screws. A style for every lamp.

Free sample 50 watt guard and complete information sent on letterhead request, mentioning socket size.

FLEXIBLE STEEL LACING COMPANY
4671 Lexington St., Chicago, Ill.

Substantial Savings
and
Increased Production
result from using Burke Electric Motors and Generators. They operate successfully under the most severe conditions.

Send for list of satisfied users in your industry.

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BURKE ELECTRIC CO.
MAIN OFFICE AND WORKS
ERIE PENNSYLVANIA
Branch Factory
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NEW YORK CLEVELAND PHILADELPHIA
PITTSBURGH DETROIT BUFFALO
Sales Agencies
CINCINNATI: UNDERWOOD ELECTRIC CO.
KANSAS CITY: W. T. OSBORN
SAN FRANCISCO: *Coast Equipment Co.*

Salem Elevator Buckets

We are manufacturers of the original SALEM ELEVATOR BUCKET which is used for handling all classes of materials in many different industries.

This type of bucket is of one piece construction, with rounded contour throughout, smooth in form, durable in service and clean in handling and delivery of materials.

There are no seams in front nor on the ends, the laps being made on the back and bottom at the ends. On the back the laps are riveted or spot welded; on the bottom the end pieces are bent under and hammered tight.

The widest range of service is covered by a very full line of regular types and sizes and made in various gauges of steel, from the lightest practical for ordinary work to the heaviest necessary for the most severe duty.

Write for new price list.

THE WEBSTER MFG. COMPANY
4500-4560 CORTLAND ST., CHICAGO
Sales Offices in Principal Cities

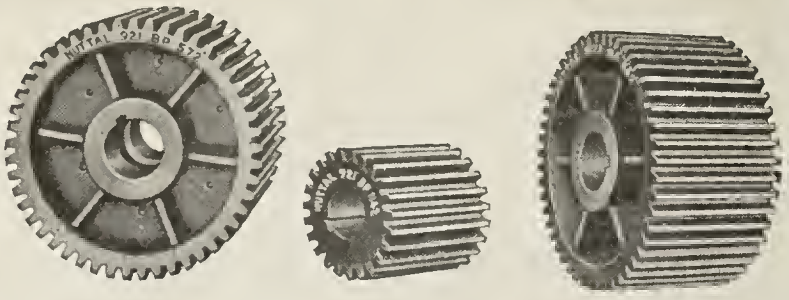
Burn More Ware
Burn It Better
Burn It Cheaper

A Russell tunnel kiln will burn your ware successfully, economically and rapidly as it has burned many other products in all parts of the country.

Send our engineers your burning data and they will figure savings possible with a Russell tunnel kiln.

Russell Engineering Company
Boston ST. LOUIS New York

Russell



AN OFFER

TO ANY BRICK OR CLAY PLANT IN THE UNITED STATES

We know that one inherent difficulty in your manufacturing plants is more breakage and more rapid wear of gears than experienced in many other industries.

It is physically impossible for a cast tooth gear to run as truly and as smoothly as a cut gear, and so long as cast gears are used breakage will persist.

It is physically impossible for an untreated steel gear to have the strength, toughness and surface hardness of a heat-treated gear, so as long as untreated gears are used wear will be more rapid—gear life will be relatively short.

Now here is our offer: Let us make you one gear or one pinion, no matter how large or how small, to replace the gear you have the most trouble with now, either from wear or breakage, and we will guarantee our BP gear to last at least four times as long as any cast tooth or untreated gear in the same place.

If it will do that, you don't need any mathematician to figure what your saving will be. You save the cost of three gears and the labor cost of three renewals, and you save three shutdowns. Send us your specifications today and begin this big saving at once.

Let us send you booklets going into details on these subjects.

R.D.NUTTALL COMPANY
PITTSBURGH PENNSYLVANIA

Philadelphia Office:
430 Land Title Bldg.

Chicago Office:
2133 Conway Bldg.

Nuttall

LYONS TO BUILD ADDITION

The Lyons Fuel & Supply Co., Ltd., Sault Ste. Marie, Ont., is building an addition to its brick plant for the manufacture of rug face brick. Machinery to manufacture tile will also be installed. This plant is owned by Hon. James Lyons, the Minister of Lands and Forests in the new Ontario Government.

Machinery and Equipment

Devices and Methods, New and Old Concerning Which Information of Interest to the Clay Manufacturer Is Published

NEW HIGH HEAT RESISTING PAINT

The Tropical Paint & Oil Co. has recently produced a heat resisting paint called Tropolite, which the company believes will greatly prolong the life of dryer cars used in a waste heat dryer. Tropolite gives best results on metal heated to 250 deg. F. or more—it will stand 800 deg. of heat. This paint has been tested against every heat resisting paint on the market of any reputation and it is stated results have proved favorable to the new product. Tropolite will cover approximately from 300 to 400 square feet, two coats, to the gallon—the covering capacity varying according to the surface and the brush work of the painter. The Tropical Paint & Oil Co. has agreed to supply a trial can of Tropolite gratis. The contents of this trial can is sufficient to coat one dryer car. Clay plants are invited to write for a trial can.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912

of "Brick and Clay Record," Published Bi-Weekly at Chicago, Ill................................for October 1, 1923.

State of Illinois,
County of Cook.
SS.

Before me, a Notary Public in and for the State and County aforesaid, personally appeared Edwin G. Zorn, who, having been duly sworn according to law, deposes and says that he is the Editor of the "Brick and Clay Record" and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and address of the publisher, editor, managing editor, and business managers are:
Publisher: Industrial Publications, Inc............Chicago, Ill.
Editor: Edwin G. Zorn..........................Chicago, Ill.
Managing Editor: F. L. Steinhoff..................Chicago, Ill.
General Manager: H. H. Rosenberg..........Homewood, Ill.
Business Manager: David B. Gibson.............Chicago, Ill.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock.)
H. H. Rosenberg................................Homewood, Ill.
David B. Gibson..............816 Eastwood Ave., Chicago, Ill.
Edwin G. Zorn..............7535 So. Morgan St., Chicago, Ili.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent., or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state)..............................None

4. That the two paragraphs next above giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

Edwin G. Zorn,

(Signature of editor, publisher, business manager, or owner.)
Sworn to and subscribed before me this 27th day of September, 1923.

My commission expires Oct. 25, 1925.
H. J. Hammond.

SCHAFFER

If An Architect Guessed —or Estimated

WHEN it came to figuring loads and designing structures, we'd live under very hazardous conditions and in slipshod homes.

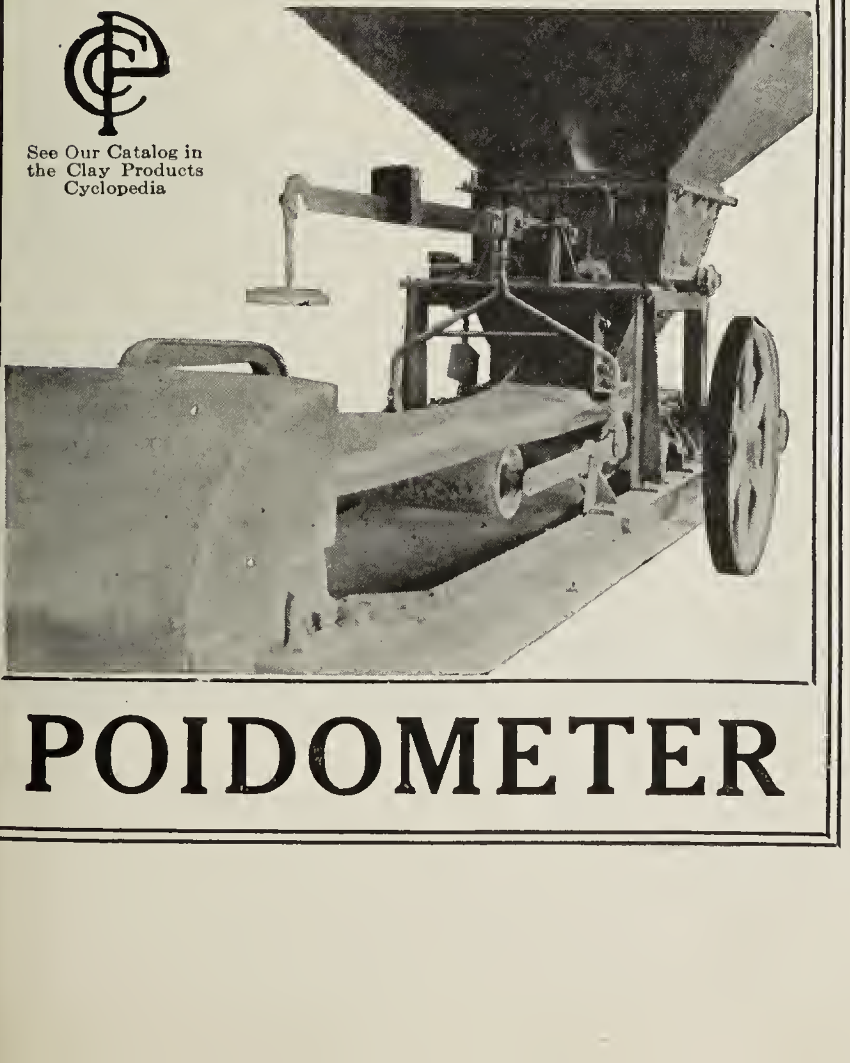
When you guess or estimate your clay mix, you run the chance of the mix's being too "short" or too "fat" and the drying and burning's claiming a huge loss.

Install the Poidometer. It feeds as it mixes, all automatically.

Write for details today

Schaffer Engineering & Equipment Company
2828 Smallman Street
PITTSBURGH, PA.

See Our Catalog in the Clay Products Cyclopedia



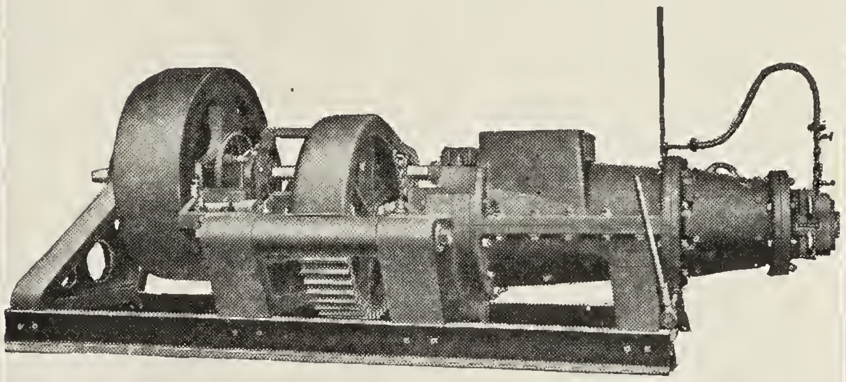
POIDOMETER

Keep Up-Keep Down

With the Freese system of slow-running gearing, now used on all Freese machines, the desired auger speed is obtained without the use of fast-running gears.

By eliminating all fast-running gears, vibration, noise, power consumption, and repairs are reduced to a minimum.

The Model GC Auger Machine, here illustrated, has but two gears, neither running faster than 125 RPM. Naturally it is a quiet, smooth-running machine—and naturally, too, it is economical in repairs and power.



Model GC Auger Brick Machine

E. M. Freese & Company
Galion, Ohio

Dependable Machinery of Proven Efficiency

From
OVERALLS *to* BROADCLOTH

THERE is a wide range of materials for clothes and a correct one for each purpose and occasion.

The word STEEL means little for there are as many different kinds and grades of steel as there are materials for human attire.

ECONOMY CAN RESULT ONLY WHEN THE RIGHT STEEL IS IN THE RIGHT PLACE.

Are any of your machinery parts giving short service on account of wear or breakage? Write us about them. State the conditions under which they operate.

We have had 181 years' experience in the manufacture of iron and steel.

Mail the coupon for free booklet, "Putting the Right Steel on the Job."

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Without obligation on my part, please mail me your booklet, "Putting the Right Steel on the Job".

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Among Our Advertisers

Details Concerning New Models, Changes in Personel, News Matters, etc., That Our Advertisers Believe Will Interest Our Readers

CO_2 RECORDING METER DEVELOPED

The Brown Instrument Co., of Philadelphia, has issued catalog No. 30 which describes a new unique instrument called the Brown Electrical Indicating and Recording CO_2 Meter. This new instrument should prove very valuable to clay products manufacturers since the continuous recording chart is arranged so as to show on the left hand side the temperature and on the right hand side the production of CO_2 in the products of combustion. The effect on the temperature caused by a change in the proportion of CO_2 can therefore be seen very easily.

It has been known and recognized for some time by combustion engineers that the proportion of CO_2 or carbon dioxide is an indication of the efficiency of operation in the combustion of the fuel. Either an excess or a deficiency of air results in a reduction of the percentage of CO_2 in the flue gas.

The object in all combustion is to keep the percentage of CO_2 as high as possible. This instrument will assist greatly along this line and therefore help clay products manufacturers to save fuel in both boilers and kilns.

The catalog No. 30 spoken of above gives some of the details and the construction features of this new instrument. In addition the Brown Instrument Co. will be glad to give further details and information to those who are interested enough to write them outlining the conditions and troubles which they wish to eliminate.

⁂

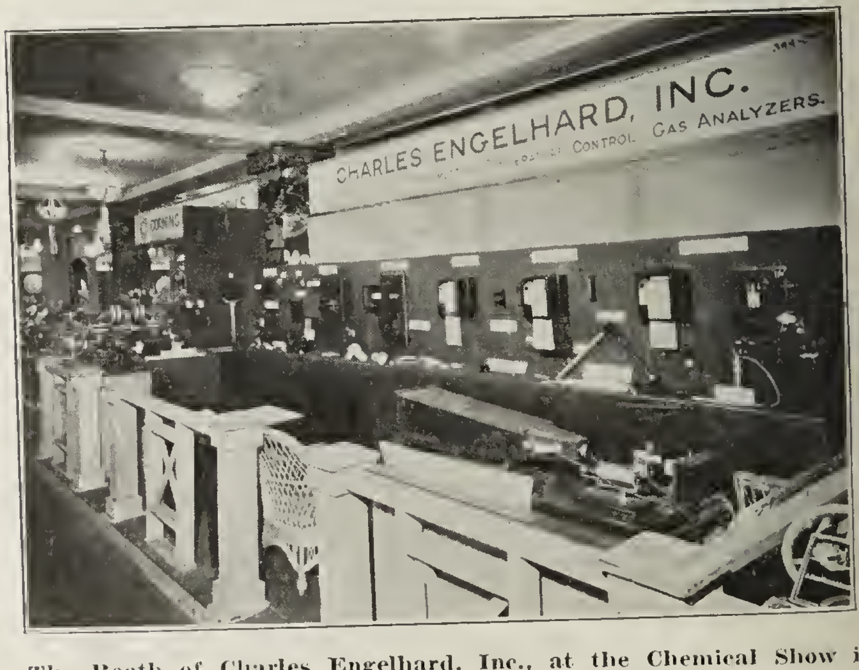
RESULTS ARE WHAT COUNT

Charles Engelhard, Inc., of New York City, have mailed out a four page folder or bulletin showing the installation of one of their pyrometer equipments at the plant of the Windsor Brick Co., Akron, Ohio. The outstanding feature of this bulletin is the letter which is reproduced.

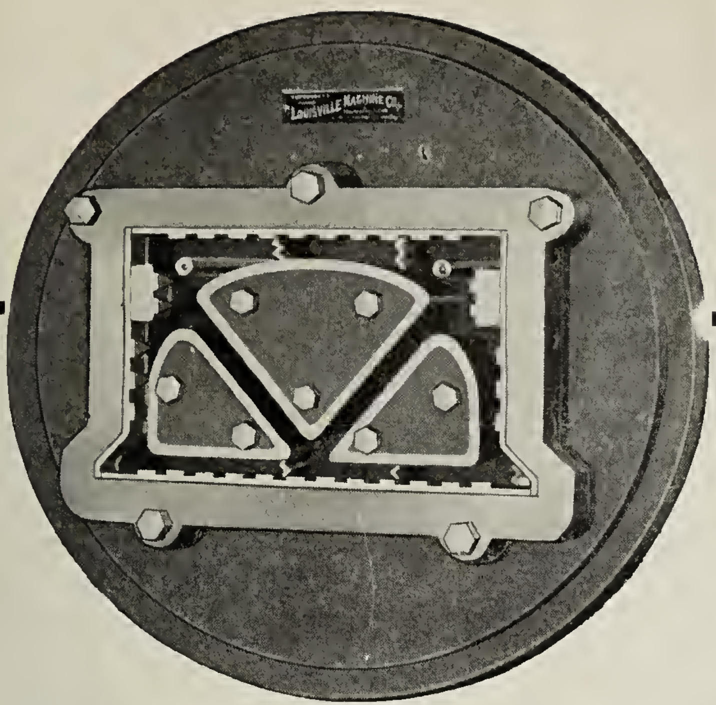
The most interesting part of this letter is the statement, "By the use of pyrometers we have had much better control over our kilns, better product, showed a saving in time of approximately 25 per cent; thereby increasing our kiln turnover and likewise our capacity, also a corresponding saving on fuel and labor, together with a heap of satisfaction in knowing that you had your kilns under control and if anything did go wrong, you knew where to place the blame."

In another part of the letter Mr. Windsor states that the plant is open to anyone who wishes to visit them and they will be very glad to supply any information about the pyrometer equipment or any other points.

This company had a very interesting exhibit at the recent Chemical Show in New York, as shown by the accompanying photograph.



The Booth of Charles Engelhard, Inc., at the Chemical Show in New York. The Various Instruments Were Mounted on Panels so that Several Interested Parties Could Examine One Instrument at the Same Time.



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Two reminders you will have of Louisville Dies being on your machines—

—Complete die which never wears out due to renewable features and service

—An output of the best formed ware obtainable

THE REASON—Louisville Dies can be made to fit your specific requirements.

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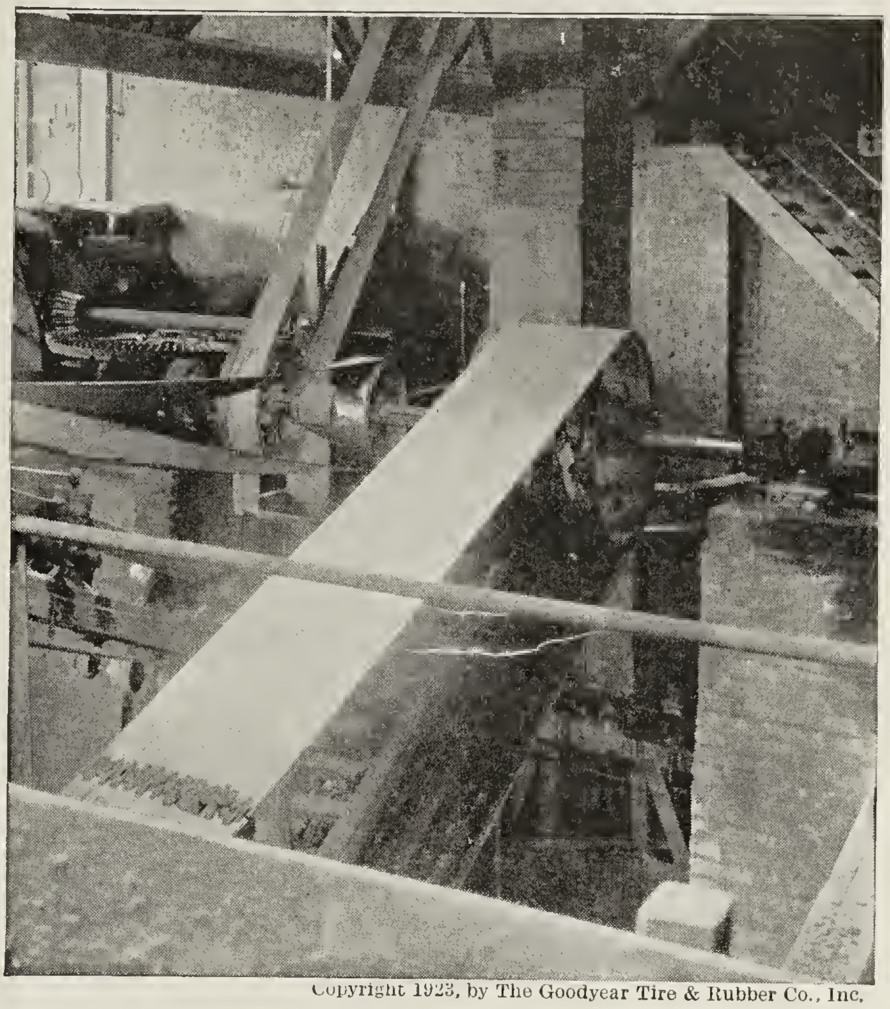
We Manufacture Hand Cutting Tables, Piano Wire Screens, Friction Winding Drums, Conveyors, Elevators, etc.

"IF IT'S DIES YOU WANT
WE MAKE 'EM"

GOODYEAR MEANS GOOD WEAR



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On all the hard drives for which the brick and clay industry is noted—the main drive, the crushers and grinding pans, pug mills and brick machines, represses and auxiliaries—and in all conveying and elevator duty, Goodyear Belts have an earned reputation for powerful, trouble-free service and long, economical life.

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Cut Your Drying Time

Reduce Costs **Save Space**
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Drying is one of the most important processes in the ceramic industry. To dry evenly, without spoilage the finest ware and do this at the lowest cost is a thing every up-to-date manufacturer is striving to do.

"Hurricane" Dryers are doing these things every day for their owners.

One customer says, "We have cut our drying time on large electric insulators from 8 days to 48 hours," another, "We are cutting our sagger costs 50% to 75%."

May we show you the opportunity of savings in your plant?

Mangles **Stove Rooms**
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Sagger Dryers **Tunnel Dryers**

Catalogs on request

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Canadian Agency:
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MONTREAL and HAMILTON

The items or instruments that proved most attractive to clay products manufacturers were the Gas Analyzer for the determination of CO_2 and other gases (a large terra cotta company is installing this equipment); Recorders for dryer temperature; Indicators for any number of kilns; Automatic Temperature Control for electric decorating kilns; Automatic Expansion Recorders; and the usual Pyrometer Equipment for clay products kilns.

Naturally, pyrometer tubes and other details and attachments were also exhibited. The entire booth was planned to give information to manufacturers using high temperatures so that they can install fuel saving and quality producing equipment, such as produced by this company.

⁂

INSURE PRODUCTION THRU SPEED CONTROL

The Bristol Co., of Waterbury, Conn., has just issued a new bulletin No. 317 which treats entirely of their Tachometers, both of the recording and indicating type. A Tachometer is a machine for showing or recording the speed of an engine, shafting or individual machine. This is an instrument that would assist in obtaining the proper production of a clay products plant in very many cases. It is especially true where the machine production is the weak point of the entire plant. Machine production can be retarded from several causes—slipping of the belt, stiff clay, shortage of material, and similar causes. Production of a machine of any kind is very hard to make up because naturally there is a tendency to damage the ware if the laboring men are crowded. This bulletin has 32 pages and shows in detail all of the several types of Tachometers manufactured by the Bristol Co., and also pointers on how to set up the different instruments, the drilling dimensions and other details of this kind.

Every clay products manufacturer should ask the Bristol Co. for a copy of this bulletin and study it so as to see what application of one of these instruments could be made in his own individual plant. In the vast majority of cases it would be found to be a very good and paying investment.

⁂

OSGOOD AGAIN STEPS FORWARD

The Osgood Co. at Marion, Ohio, has put on the market another shovel of the same high grade and quality as the other Osgood shovels. This is a full revolving steam shovel of 1¼ yard capacity and is classed as a heavy duty shovel.

All parts are of ample size and capacity, the dipper being full 1¼ yards with manganese front. Two types of tread are used: one, traction wheels and the other a caterpillar traction.

The Osgood Co. states that the objective in designing this machine has been to produce a revolving steam shovel of the 1¼ yard class suitable for the heavy work that it is called upon to do without in any way sacrificing its speed, simplicity or ease of operation. They will gladly give further details and send specifications to anyone addressing them.

⁂

GOOD MOTOR INFORMATION AVAILABLE

A bulletin on Polyphase Induction Motors has just come from the press for the Burke Electric Co. of Erie, Pa. While these motors are not new, the bulletin spoken of brings to light some of the features in a little better way than was formerly available. These motors have been developed especially to meet the most severe requirements and conditions encountered in locations where ruggedness and reliability are essential. This has been proven in the success that has followed the installation of this type of motor in the many heavy duty installations in clay products plants.

It is interesting that the only actual photographs of installations shown in this bulletin are two showing this type of motor driving wet pans, which are grinding ganister rock in silica brick plants.

These motors are built so that they can be adapted for almost any type of drive. For instance, they can easily be suspended from either side wall or ceiling by simply turning the bearing brackets. These and many other features of the use and construction of these motors are explained in this bulletin No. 128, which the Burke Electric Co. would be glad to send to anyone interested in this type of motor.

⁂

The Harrington & King Perforating Co., Chicago, announce a change of address to their new factory building 5655 Fillmore Street, where they have installed additional equipment to better serve their many good customers for perforated metal. They have also issued a leaflet containing a map, this map showing the exact location of their new factory and how to reach it.

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

The Forward March

An editorial in the Chicago Journal of Commerce, October 24, 1923.

EIGHTEEN MONTHS ago a man picked up a tooth in a quarry in western Nebraska, loosened from rock made in the pliocene age, said to have been a million or a million and a half years ago. No difference about that, for no human intellect can grasp a hundred thousand years, to say nothing of a million. But a scientist studied that lone tooth, and found that it belonged to a man-ape that must have lived in the age when the rocks were formed. It is sufficiently interesting to know that a single tooth is evidence around which may be built a creature that existed presumably thousands of years before man was on earth. Now, from the same Nebraska quarry, comes the skull of a giant camel and bones of other extinct animals (110 different species, it is said) hitherto believed to have existed only in Europe. Asia and Africa.

The curiosity of man is never appeased. He wants to know all about what is on the earth, under and above it, and has learned a vast deal about it in each direction. In the memory of men now living, "Darkest Africa" was an unknown mystery. Now railroads have pierced the places Stanley trod in his historic exploration of territory white men had never seen. The North Pole has been visited. Only South America remains with vast stretches as yet mere blanks in geography. The surface of the globe will soon be known and described.

Under the earth men have penetrated but the comparative depth of a scratch. Ocean depths have been plumbed, and earth has been made to yield from below tin, coal, copper, oil, gas and iron for the uses of men. Above, the source and laws of the winds, the clouds and the weather have been sought and to a considerable extent understood, while astronomy and its allied sciences have mapped not only our own solar system, with its planets, moons and comets, but weighed them and calculated their distances and annual movements, "thinking the thoughts of God" while they did so. Myriads of stars have been catalogued, examined, measured, and their distances from earth solved by learned men. Nonsense, says the ignorant man. But it's so. God's truth. When eclipses of the sun are calculated to the minute years before they happen; when the return of heavenly wanderers, the great comets which blaze a fiery track across the sky, is foretold, none but a fool ventures to dispute the learning of the astronomers.

Discoveries multiply. The botanists; the metallurgists; the antiquarians, the students of ancient tombs, languages and localities; the searchers after the mysteries of electricity, air, ether—all these go to the very vitals of things. We dare not deny their discoveries, for they have given us the lightning in harness, the telephone, the radio, the airplane, each and all indisputable proofs that they know what they are about. And while all these services to mankind are constantly accumulating, other men are devoted to other realms of science—government, law, medicine, constitutions, business, manufacture, finance, health, religion. There is no rest anywhere along the line. Wisdom increases. Knowledge piles up in the records. Human comfort and security improve. Twentieth century intelligence includes all these things and many others. Yet with them all we still have on earth intellects 2,000 years behind the times; yes, 5,000 years behind. Fetishism, the first and crudest form of religion, still exists. Superstitions all up the line to rational faith may yet be found.

As the industry is entering the period of cold months when business always has been less brisk, it is asking itself right now, "What are the prospects for the next year?" Because certain persons whose words carry a great deal of weight in the minds of many have painted a rather pessimistic picture for the next year there has arisen in the minds of some an element of doubt.

Perhaps in some industries the future is not as bright as it has been. Certain lines have experienced an unusual period of growth and prosperity. But in the construction field as well as in many other important industries, including agriculture, fundamentals which make for good business are favorably oriented.

Clay products manufacturers will undoubtedly enter into greater competition with lumber than heretofore. Our lumber supply is fast dwindling. Moreover, we understand that Japan will take tremendous quantities of lumber from U. S. markets. We believe the clay products industry should expect good business.

But—and this is a large but—mankind as a whole grows better and wiser year by year. Education is slowly saving the human race, and some time the fundamental laws of all human conduct and processes, physical and intellectual, will be written and accepted.

Getting Rid of the Seasons

By. William R. Basset, President of Miller, Franklin, Basset & Co., Inc.

OF ALL the so-called "unsolvable" problems of business, perhaps the most expensive and the least necessary is the problem of seasonal production.

Few concerns make any effort to solve the problem. They accept it as unalterable, probably in the belief that the seasons are an act of God. If they are rich they pile up inventories for a short selling season by keeping the plant going the year round. If they can't finance that, they shut their plants down.

Yet every year a few more concerns succeed in doing away with seasons. A branch of the garment industry reduced costs and prices enough by year round production to greatly lengthen the selling period. Another business reduces prices in the off-season as an incentive to its retailers to buy then.

A soap manufacturer found that it was the jobber who had the seasonal hallucination. When he went direct to the retailer he found that people wash with soap the year round. He now guarantees year round employment to his workers.

Even the building industry which comes in closest contact with cold and snow has found that in most climates construction can go on in the winter as well as any time. The American Construction Council has shown that the building season can be lengthened and hopes ultimately to do away with the peaks and valleys in its industry entirely.

When more concerns cease hibernating during off seasons, their profits will be bigger and labor troubles fewer. A little study will show any industry that it need not have such violent seasonal fluctuations.

To Make Common Brick History

At Convention of Common Brick Manufacturers Association in Los Angeles—Wonderful Cross-Country Trip Planned—Much Enthusiasm Already Evidenced

NEVER in the history of the common brick business has there been the prospect of such a large and enthusiastic gathering in a national convention as is apparent at this moment, in connection with the Sixth Annual Convention of the Common Brick Manufacturers' Association of America, to be held February 11 to 16, 1924, inclusive, in the city of Los Angeles, Cal.

This is the first time that an effort has been made to have a convention of the common brick manufacturers on the western coast, as all previous conventions have been held in the middle west and eastern states. The enthusiasm over having the convention on the western coast was started at the last convention of the association held in Cleveland, when the California delegates, six in number, urged so strongly that the convention be brought to the coast that it was almost a foregone conclusion at that time that the invitation would be accepted.

Bring Your Families With You

The preliminary pamphlet sent out by the association announcing the definite decision of the board of directors to hold the next meeting in Los Angeles was sent broadcast not only to common brick manufacturers all over the United States regardless of their affiliations with the association, but was also sent to the homes of the individuals connected with the brick business, so that there was a double-barreled value to this announcement which could not be ignored, as the attendance of the families is also desired.

This pamphlet gave full details of the proposed trip and an outline of the itinerary which would be adopted, together with the statement of the remarkably low price which was to be made for the round trip rate from Chicago to Los Angeles and return, or from Kansas City to Los Angeles and return, the two points from which special trains will be sent out. These two points have been selected because there will be many people from the South making the trip and it will be easier for them to meet at Kansas City rather than come to Chicago, while those from the central, northern and eastern portions of the country can more conveniently meet at Chicago. Special trains with their own running schedule will be chartered by the association to carry those who will make the trip and everything has been arranged for the travelers' comfort and convenience en route.

Probably Have Three Full Trains

From all appearances, there will be two full trains out of Chicago and one train from Kansas City, all Pullmans with the exception of two dining cars to each train and the necessary baggage equipment.

The first stop en route will be at Denver, where a day and evening will be spent with the Colorado manufacturers and every arrangement is being made to entertain the visitors in the best of style while they are in that fine city. The trip thru the Royal Gorge, which is considered one of the marvels of the age, will be made in daylight so that it will be a most enjoyable scenic event. A day will be spent in Salt Lake City, that marvelous and beautiful city of the desert, where entertainment will also be provided and where a very profitable and pleasant day and evening can be spent. There will then be a trip thru the Feather River Canyon, which is also a beautiful scenic route between Salt Lake City and San Francisco. Before arriving at San Francisco, the entire party will be entertained in a manner which is at this time and will be kept a secret until the arrival of the guests, but it is sufficient to say that it will be a truly Californian welcome to the East. Considerable time will be spent in San Francisco in looking over that beautiful city in the day time and visiting the famous Chinatown at night.

San Francisco to Los Angeles in Daytime

The route from San Francisco to Los Angeles will be more or less of a daylight trip, so that the guests can see some of the wonderful California development in the rural districts. There will also be a stop to look at the big trees which have been so much talked about, and probably a few hours at Santa Barbara, which is well known as a winter resort and prominent for its mission. In Los Angeles, an entire week will be

World Famous Pike's Peak Which the C. B. M. A. Convention Party Will Probably Have an Opportunity to See

A View of the Clear Creek from Windy Point, a Beauty Spot in Denver's Mountain Parks

spent, the association headquarters being at the new Hotel Biltmore.

In addition to the convention, of which the full program will be announced at a little later date, there will be much time given to viewing the much advertised city of Los Angeles and surrounding country. The brick manufacturers particularly will be interested in the progressive methods used in manufacturing of brick in that territory. Many of them, no doubt, will be able to gather a great deal of new information valuable to them in their own home efforts. They will also learn of the wonderful development of brick in the State of California and see at first hand how it is being done and what is being accomplished.

Sessions Will Be Highly Interesting

The convention program itself will not only be a pleasant one, but will be a most profitable one. The officers of the association promise that it will have many unique features and be of such a character that no one will want to miss a single hour of the daily short sessions. The machinery manufacturers will have many fine exhibits in connection with the convention and be prepared to give any assistance which may be required of them in furthering the interests of the manufacturers of common brick.

After leaving Los Angeles on the return trip, a stop is to be made at San Diego for a few hours and then there will be a daylight ride thru the wonderful Carriso Gorge, California's newest scenic marvel, which is said to be fully as remarkable as the Grand Canyon of Colorado, and the railroad thru which is said to be one of the most difficult engineering feats of history. The route also passes thru the Imperial Valley in Southern California, which is so far famed for its wonderful crops of all kinds and which is a remarkable land below sea-level, surrounded by the mountains of the desert. A few hours' stop will be made in the city of Phoenix, Ariz. From Phoenix, automobile busses of the most convenient and comfortable type will be taken over the famous Apache Trail and stops will be made to visit the nationally known Cliff Dwellers' section and to view the new Roosevelt Dam and get a really good conception of some of the gold and copper mines about which so many have read and so few have ever seen.

A day will be spent in El Paso, Tex., and in Juarez, Old Mexico, which is just across the river from El Paso. A day will also be spent in the well-advertised city of San Antonio, Tex.

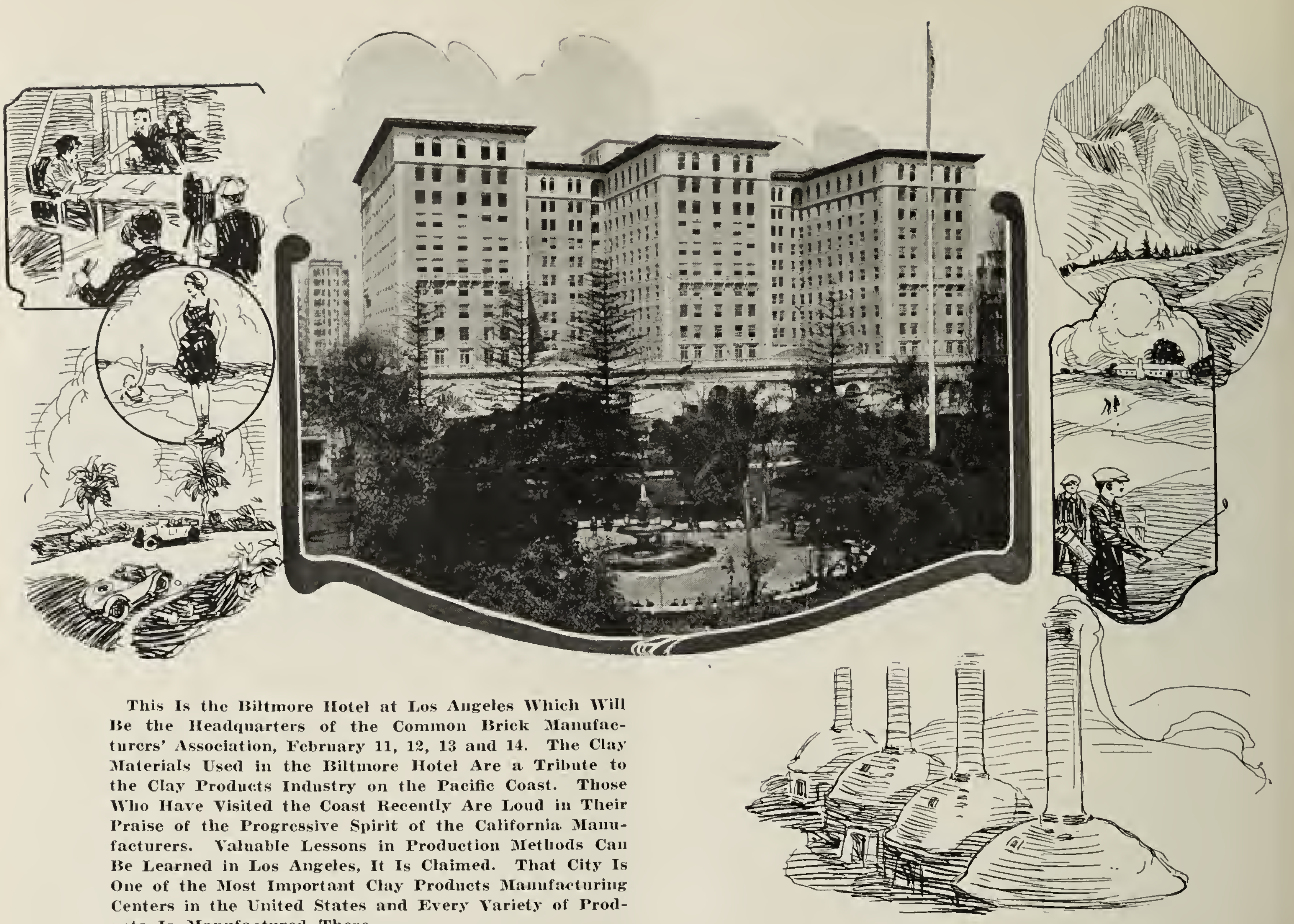
The entire trip has been well planned and the details have been worked out to the minutest degree, which will insure to all those making the trip the acme of pleasure and the entire elimination of worries or cares incident to the trip. It is to be personally conducted by the active executives of the association. The cost is remarkably low and has only been made possible by the knowledge of arranging such trips possessed by Charles A. Bowen, assistant to the president, who has handled other trips for other associations along similar lines.

Trip Getting Much Publicity

A unique feature of the publicity being given to the convention and the trip is that in addition to the original pamphlet sent out by the association, and the second one in the nature of a railroad folder, which was mailed only a short time ago, there is also being sent by either the railroad or the publicity agency in the principal towns en route, a folder or circular concerning the different scenic routes which are taken and of the cities which will be visited, so that everyone on the mailing list of the association is receiving something in relation to the trip, all of which is tied in by some announcement of the convention every week. The reservations will be opened about November 1 and will be closed on December 15. All arrangements to go on these special trains must be made thru the office of the Common Brick Manufacturers' Association in Cleveland and all assigning of space in the trains from Chicago or Kansas City will be made by the association.

Every Brick Manufacturer Is Welcome

All brick manufacturers, members or non-members, are urged to be in attendance at the convention because it is their convention, and no lines are to be drawn as between members or non-members. It is the aim of the Common Brick Manufacturers' Association to be of the highest service to the brick industry and those engaged in it, regardless of their present affiliation with the association, and all brick manufacturers have been urged to lay aside any apprehensions as to their being welcome or having a part and to feel that they have as much interest in the gathering as could possibly be had under any other existing conditions. Further-



This Is the Biltmore Hotel at Los Angeles Which Will Be the Headquarters of the Common Brick Manufacturers' Association, February 11, 12, 13 and 14. The Clay Materials Used in the Biltmore Hotel Are a Tribute to the Clay Products Industry on the Pacific Coast. Those Who Have Visited the Coast Recently Are Loud in Their Praise of the Progressive Spirit of the California Manufacturers. Valuable Lessons in Production Methods Can Be Learned in Los Angeles, It Is Claimed. That City Is One of the Most Important Clay Products Manufacturing Centers in the United States and Every Variety of Products Is Manufactured There.

more, all brick manufacturers who have been invited and urged to attend the convention, have been given the privilege of inviting their own personal friends and acquaintances outside of the brick manufacturing business to join them in making the trip.

Big Attendance Is Expected

Every indication coming into the office of the association at the present time is that there is to be a tremendously large crowd. The present indications are that there will be at least two carloads from the Virginia district, at least one from New England States, one from Hudson River District, at least one from Philadelphia, in all probability two special cars from Detroit, two from Cleveland and at least two if not three, from Chicago alone. There will probably be special cars and groups from many other sections.

In due time, the complete program will be announced and other details of the trip will be given from time to time, and it is a reasonable prediction to make, that the trip and the convention will be an outstanding event in the history of the common brick manufacturing business which will long be remembered.

If you have not yet made up your mind to attend this convention, do not hesitate but decide on it now and make your preparations accordingly.

The manufacturers of clay working machinery and equipment are planning to make an attractive display at the new Hotel Biltmore in Los Angeles, in connection with the convention. A general invitation has been issued by the C. B. M. A. to all machinery people to participate in the meeting. Some of the principals connected with the eastern concerns will join with the brick men on the trip to the coast.

Very soon definite reservations will be accepted, and all reservations have to be made before December 15. At the same time that reservations for transportation are made the association will accept hotel reservations in Los Angeles for those who expect to stop at Hotel Biltmore. This applies as well to the machinery manufacturers, and large spaces convenient to the convention hall are being held in reserve for the machinery men.

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CONDITIONS IN SOUTH IMPROVE

Since the first of October there has been a steadily improving demand for brick of all types and tile at southern plants, with the result that many of the larger plants now are sold again well ahead of capacity production for some weeks, and the industry over the South operating as a whole on a very satisfactory basis.

Considerable improvement is reported by manufacturers in the freight car situation the past two weeks, tho companies located on shorter line railroad routes still are experiencing some difficulty in securing empty cars. Larger brick companies, however, principally those on main line routes, are probably securing about 80 to 85 per cent of their car requirements, while the industry as a whole is probably averaging 75 per cent. of requirements.

⁂

TO STUDY SILICA

A study of the mining, preparation and uses of silica will be undertaken by the Department of the Interior, thru the Bureau of Mines. The investigation will cover the range of quartzite, sandstone, sands of all kinds, tripoli, diatomaceous earth, flint and rottenstone. The investigation will consist of library research, correspondence and field study, leading to possible findings and recommendations for improvement in efficiency, safety, and quality of products.

Brick Is Proof Against Fire

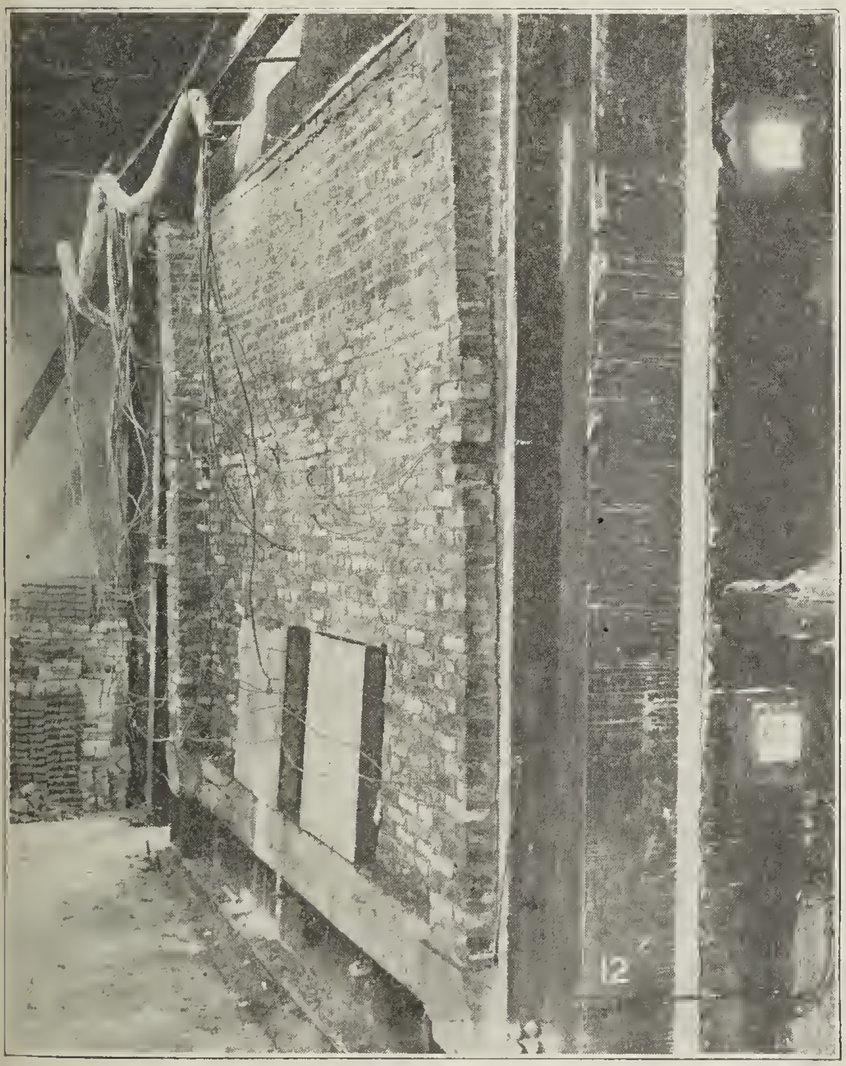
Both Ideal and Solid Walls Come Thru Bureau of Standards' Fire and Water Tests with Honors—Withstand Terrific Heat

SERIES OF FIRE TESTS and fire and water tests are being conducted at the Bureau of Standards, U. S. Department of Commerce, on walls of representative clay, sand-lime and Portland cement-sand brick to develop the information necessary for safe and economical construction. The test walls, 11 feet high and 16 feet wide, are built under conditions intended to secure the quality of masonry obtainable in building construction, and in the fire tests are exposed to a controlled test fire on one side for periods up to six hours, which is deemed to cover the range of exposures incident with fires in buildings.

In the fire and water tests a hose stream from a 1⅛ inch nozzle under 50 pounds water pressure is applied over the hot sides, following a one-hour fire exposure.

Types of Walls Tested

The walls so far tested have either been restrained by being built into rigid containing frames or have been unrestrained with full opportunity for expansion at sides and top. The greater number of walls were laid with brick flat in common or American bond with one header course per five stretcher courses. Some test walls were built hollow with brick on edge, headers and stretchers alternating of the type known as the all-rowlock Ideal wall construction. The thicknesses were generally 6 and 12 or 13 inches, altho in clay brick a few tests of four inch walls were made. Most of the walls were laid in Portland cement-lime mortar of the proportions 1:1¼:6, the batch measure being one bag cement, one bag hydrated lime weighing 50 pounds and six cubic feet of screened damp sand, the average dry content of which weighed 78 pounds per cubic foot. Two walls laid in a 1:3 Portland cement and sand mortar and two in a 1¼:3 hydrated lime and sand mortar.



This Picture Shows the Unexposed Side of an 8 inch Solid Wall Unrestrained, Built of Eastern Surface Clay Brick. This Wall Has Been Under a Six Hour Fire Test. Note How Pyrometers Were Inserted at Numerous Points to Determine the Heat on the Unexposed Surface

TABLE I.

Maximum Temperatures on the unexposed Side of Brick Walls at the End of the six hour Fire Test:

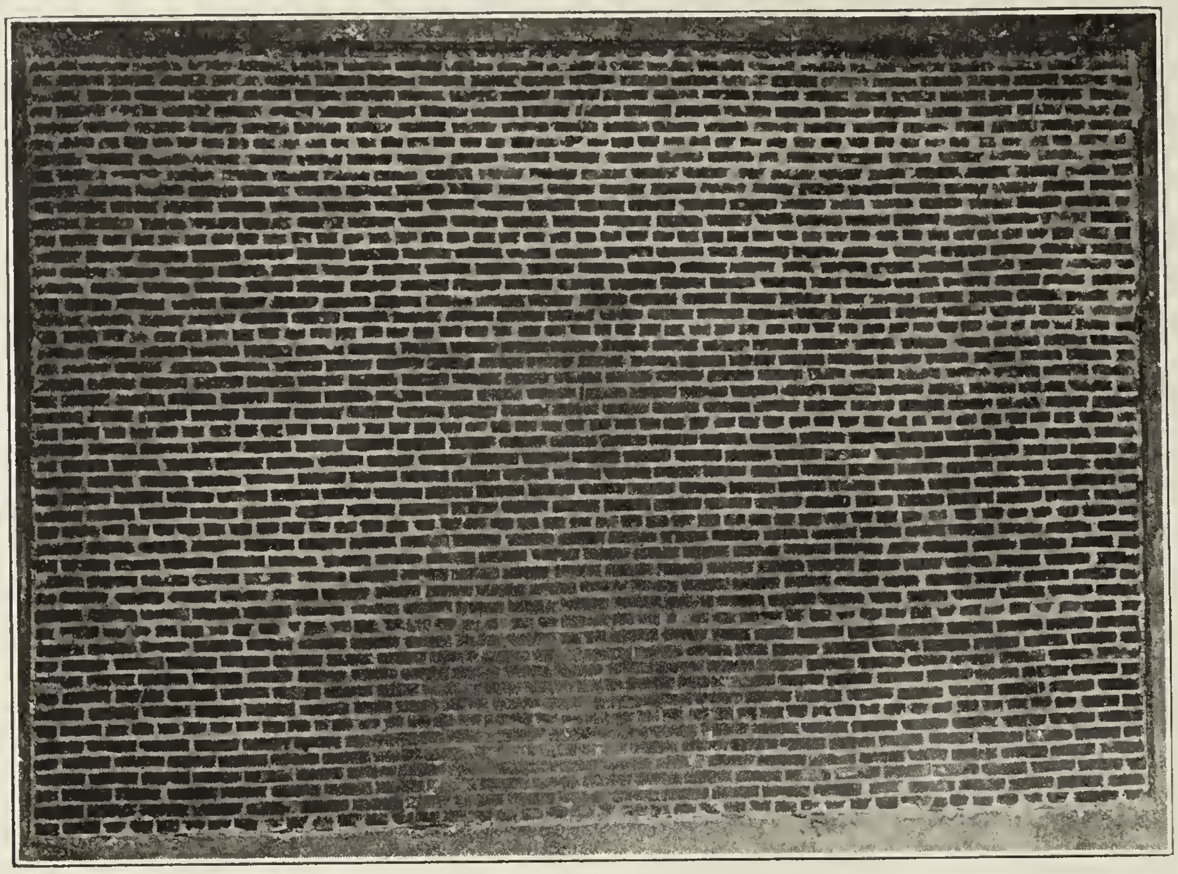
Nominal thickness and type	Maximums at regular locations, degrees Fahrenheit		
	High	Low	Average
8-inch solid	367	192	358
8-inch hollow	522	453	486
12 to 13-inch solid	190	172	179
13-inch hollow	(at 5 hours)		172

Test Effects and Results on Various Types of Walls

On application of heat the greater expansion of the wall materials on the exposed side caused deflection of the central portion of the wall toward the fire and the top of the unrestrained walls away from the fire. No walls eight inches or over in thickness collapsed due to deflection. Four inch walls developed failure or excessive deflection after three to six hours fire exposure. The cracks formed in the unrestrained walls were seldom over one-sixteenth inch wide except at the borders with the panel frame where larger openings were formed on the unexposed side by the tilting of brick from deflection of the wall. In the unrestrained walls cracks up to three-eighths inch wide were formed on the unexposed side, which generally became smaller toward the exposed side. There was little spalling of the brick units in the fire tests, altho frequently cracking longitudinally with the wall one-half to three-quarter inch back of the exposed face. Fusion and fluxing up to about one-half inch of brick thickness on the unexposed side occurred with one kind of surface clay brick and to less extent with cement-sand brick. There was also some incipient fusion on the exposed side of the hard sand-lime and the shale brick, the fusion effects being all confined to the last hour of the test. Only the exposed brick lost strength appreciably due to the fire exposure. As it concerns freedom from cracking, fusion effects and loss in strength the brick can be placed in the following approximate order:

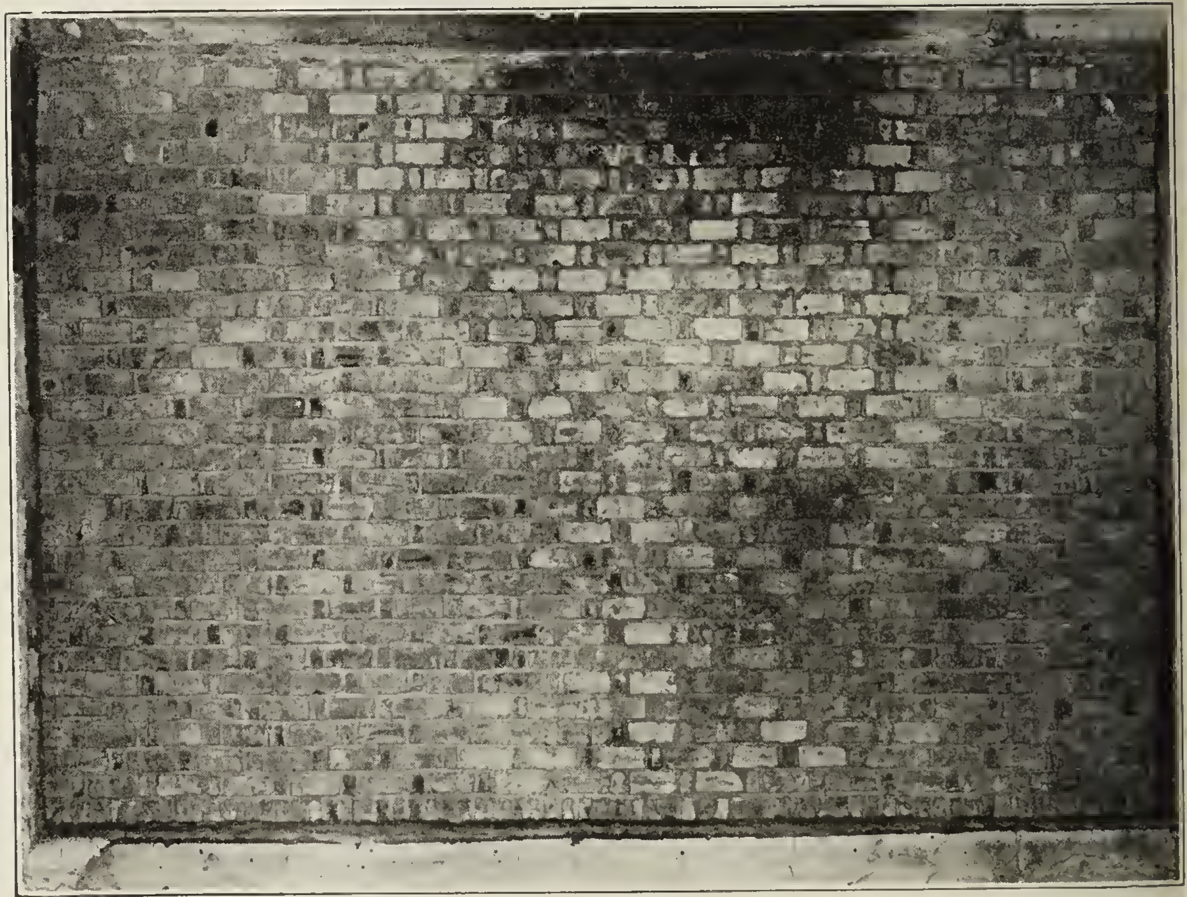
Red burning, high-fusing surface clay, light burning low fusing surface clay, Portland cement and high silica sand brick, soft sand-lime brick, hard sand-lime brick, and shale brick. No general separations of exposed and unexposed layers of brick occurred, the one header course per five stretcher courses in the solid walls and headers alternating with stretchers for the hollow wall being a sufficient tie against the stresses induced by fire exposure.

Temperatures were measured in the furnace, at representative points within the wall and on the unexposed surface. Open or imperfect joints in the brick work were revealed by early steaming on the unexposed side. Temperature changes higher by from 10 to 100 per cent. than at the regular outside wall locations—obtained at cracks and open joints near the end of the fire tests with eight-inch walls. Under cotton and excelsior pads placed against the outside surface these temperature increases ranged from 5 to 60 per cent. above those at points freely exposed to the air. The range of maximum temperatures obtaining on the unexposed surface at points exposed to the air and not directly on cracks or imperfect joints is given in Table 1, the temperatures being in all cases the highest at one of five or more locations at the end of the six hour fire test.


Exposed Side of an 8 Inch Solid Wall Restrained, After Being Subjected to a Six Hour Fire Test. The Wall Was Built of Eastern Surface Clay Brick

Temperatures were also measured within the walls, the critical point being four inches from the unexposed face, which is generally the greatest depth to which combustible floor and partition members are entered. Taking 250 deg. C. or 482 deg. F. as the temperature that may cause ignition of such members, this limit was reached in eight inch solid walls in 1¾ to 4 hours, in eight inch hollow walls from 1 hr. 08 min. to 1 hr. 26 min. and in a 10 inch hollow wall at 3 hr. 36 min. This temperature was not attained in the 18 and 13 inch solid walls, the temperature at this point being within a few degrees of 222 deg. F. at six hours.

The maximum center deflections of the eight inch restrained walls varied from one inch to five inches, the average for solid walls being 2.64 inches and for the hollow walls 2.34 inches. The outward deflection at the top of unrestrained walls ranged from 4.7 to 9.7 inches, with averages of 7.63 and 6.20 inches for the solid and the hollow pipe, respectively. For 12 and 13 inch restrained walls the maximum center deflection varied from 1.1 to 2.05 inches and the outward top deflection of unrestrained walls from 6.2 to 9.7 inches.


An Exposed Side of an 8 Inch Ideal Wall Unrestrained, After a Four Hour Fire Test. The Wall Is Built of Eastern Surface Clay Brick

Pilasters were built into the eight inch unrestrained walls to avoid a too extreme condition, since some support is generally given by cross walls, pilasters and similar details in buildings. This was done in order that the tests would simulate actual conditions as nearly as possible.

Withstand Fire and Water Tests

In the fire and water tests no general collapse occurred, altho partial local failure developed at the borders of unrestrained eight inch walls due to washing out of mortar where the adherence to the brick was weak. The water dislodged portions of the brick cracked in the preceding fire exposure and further loss of material was caused by the sudden cooling and erosion, the damage to the brick being about the same as in the six hour fire test.

The results of the tests are summarized in Table 2 as fire resistance periods, these being safe units that can be directly applied to building exposures. They are based on the temperatures developed in the tests, with necessary margins taken for possible higher temperatures at cracks, imperfect joints and under combustible materials stored against the wall, as also for possibility of material and workmanship being inferior to that used for the test walls, altho considerable care was taken to construct them under conditions representative of construction practice.

High Deflections in Four Inch Wall

Referring to Table 2, the four inch wall is given no classification as a load-bearing member because of the high deflections developed. The eight inch solid wall is given a four hour classification for protecting non-hazardous materials as based on temperatures developed on the unexposed side, but the load-bearing properties were not sufficiently defined in the tests so far completed to warrant load-bearing classi-

TABLE II.

Fire Resistance Periods of Brick Walls.

Thickness and Type	Interior Structural Members Framing Into Wall	Materials Protected	Load on Wall	Fire Resistance Period
4 inch, solid	Incombustible and fire resistive	Non-Hazardous	Non-bearing	1 hour
8 inch, solid	Incombustible	Non-Hazardous	Non-bearing	4 hours
8 inch, solid	Incombustible	Hazardous	Bearing or Non-bearing	2½ hours
8 inch, solid	Combustible	Hazardous or Non-hazardous	Bearing or Non-bearing	1½ hours
8 inch, hollow	Incombustible and fire resistive	Non-Hazardous	Bearing or Non-bearing	2½ hours
8 inch, hollow	Incombustible and fire resistive	Hazardous	Bearing or Non-bearing	1½ hours
8 inch, hollow	Combustible, on one side only	Hazardous or Non-hazardous	Bearing or Non-bearing	¾ hours
8 inch, hollow, filled solid at floor lines	Combustible or Incombustible	Hazardous or Non-hazardous	Bearing or Non-bearing	1½ hours
12 or 13 inch, solid	Combustible or Incombustible	Hazardous or Non-hazardous	Bearing or Non-bearing	4 hours
12 or 13 inch, hollow	Incombustible	Hazardous or Non-hazardous	Bearing or Non-bearing	4 hours
12 or 13 inch, hollow	Combustible	Hazardous or Non-hazardous	Bearing or Non-bearing	2 hours
12 or 13 inch, hollow, filled solid at floor lines	Combustible or Incombustible	Hazardous or Non-hazardous	Bearing or Non-bearing	4 hours

Note: When combustible or non-fire resistive floor members frame into eight inch walls from both sides, to develop the periods above indicated, they must be so placed and protected as to have not less than four inches of solid material between them, and between their ends and the opposite wall surface. Filling at floor lines of hollow walls must be four inches or more in thickness above, below and between the floor members. In the case of 12 and 13 inch walls they shall not project more than four inches into the wall.

The floor members must be framed to release readily from the wall in case of collapse of floor construction in fires.

For the given resistance periods, load bearing walls must be laid in cement or lime-cement mortar not leaner than used in the test walls.

fication for this period. For the other uses of eight inch walls where the resistance period is limited by temperature within the wall or on the unexposed surface to values of 1½ hours or less, it appears safe to give load bearing classification for eight inch hollow and solid walls, as well as for all uses of twelve and thirteen inch walls, as judged by the deflections during test and strength of brick and masonry before and after fire tests. A further series of fire tests of brick walls under load will soon be undertaken that is intended to determine more definitely the strength of four inch and eight inch walls under fire conditions, at the conclusion of which a report will be issued by the Bureau of Standards on the whole investigation. It is seen from the table that the framing of combustible members into eight inch walls considerably decreases their fire resistance. The resistance of hollow walls thus used can be increased by filling solidly above, below and between such floor members with incombustible material. The twelve and thirteen inch solid walls were proven adequate for the full four hour period under all conditions.

How to Apply Information Obtained

As an aid in applying the resistance periods given in Table 2 to fire conditions in buildings, it can be tentatively stated that fire experience and some experimental investigations on the intensity and duration of fires, indicate that fires in residence and office occupancies do not generally exceed in severity the first hour of the exposure in the tests, and very exceptional fires, if any at all, will exceed the first 1½ hours' exposure. The materials housed can generally be taken as non-hazardous. Fires in buildings housing merchandising, manufacturing, and storage are known to be of greater severity, possibly in some cases equivalent to the four hour exposure, depending on the amount and character of combustible materials present. The above considerations apply to interior exposures. The fire effects on neighboring detached buildings from the burning of an adjacent building can generally be taken as less severe, due to the shielding effects of the walls of the burning building, particularly where of fire-resistive construction, and less likelihood for high temperatures to build up in the unconfined space between them.

⁂

ELECTRICAL CONDUCTIVITY OF REFRACTORIES AT HIGH TEMPERATURES

Reliable and comparable data are needed on the electrical resistivity at high temperatures of the refractory materials suitable for furnace linings. In the performance of experimental work by the Department of the Interior, at the Bureau of Mines Ceramic Experiment Station, Columbus, Ohio, methods and apparatus for making such measurements have been developed. Test pieces for determination of the electrical resistance were prepared from fire clay, kaolin, alundum, diaspore, thoria, silica, zirconia, magnesite, silicon carbide, sillimanite, zirkite, and magnesium spinel. Resistance measurements have been run on half of the pieces. Carbon electrodes are employed, measurements being run in an atmosphere of pure nitrogen to a temperature of 1,400 deg. C. in a gas-tight platinum-resistance furnace.

⁂

MASON CITY WANTS LOWER RATES

Mason City, Ia., industrial plants, including the National Clay Works, North Iowa Brick & Tile Co., Mason City Brick & Tile Co., Lehigh Portland Cement Co. and Northwestern States Portland Cement Co., have lodged a complaint with the Interstate Commerce Commission protesting against freight rates charged on bituminous coal to Mason City from Illinois and Indiana districts. The complainants represented that their aggregate consumption is 600,000 tons annually, and that substantial reductions in present freight rates are necessary to bring them down to a just and reasonable basis.

BUILDING LABOR COSTS TO STAY UP

There is no likelihood of reductions in the cost of building labor in the immediate future, according to a survey of the labor situation in the building industry made public by S. W. Straus & Co. recently. This statement was based largely on data gathered at the convention of the Building Trades Department of the American Federation of Labor at Portland, Ore., at which 850,000 organized building craftsmen of the country were represented. "The attitude of labor, as it was expressed at the Building Trades Department convention and in reports and statements by the leaders of organized labor, indicated that in some trades still higher scales can be expected with a continuation of present activities," the survey states. "All building labor is employed at the present time, according to the reports of union officials."

* * *

BUILD 320 FOOT DOCK

Charles S. Shultz & Son, who operate brick manufacturing plants at Hackensack, N. J., and East Kingston, N. Y., recently erected at the Hackensack plant a concrete dock 320 feet long, for the better handling of clay from the Hackensack River.

* * *

Cleveland Men Organize a "Brick Homes Bureau"

BIGGEST STEP FORWARD ever taken by the brick or building material interests of Cleveland, Ohio, will become a fact on November 1, when the Brick Homes Bureau will open for business. It has taken more than three years for the material factors of the community to come to a realization that their product can be sold as can any other product —by putting it definitely and directly before the public.

The plan, as it will be carried out now by several of the building material interests whose interest is largely tied with brick and fire safe construction particularly, was conceived by the Cleveland Builders Supply & Brick Co. as far back as 1920. At that time a campaign of fire safe construction propaganda was started and developed consistently thru the following years, with the result that officials of the company were convinced that new business can really be created thru such a medium. Liberal advertising space was carried in daily newspapers, models of brick houses were constructed and shown at strategic points in the city, and advertising material prepared that would appeal to the home builder who really wanted a permanent residence.

Appeal Directly to Public

The present Brick Homes Bureau found its inception in that work. Several of the individual firms in the city now have united in forming the bureau, and the work in a broader sense, gets under way now.

With the idea of appealing directly to the public, ideal headquarters have been taken at 133 Superior Arcade, one of the several "indoor streets" for which Cleveland is famous. Thousands of persons pass there daily, many of them prospective home builders, who will be impressed at first hand with what the permanent home means and how they can build it.

This location is liberally supplied with window space. Models of houses will be shown, some of those used by the Cleveland Builders Supply & Brick Co. itself in recent building and real estate shows. In addition, there will be many exhibits of building materials of all kinds, all of fire proof characteristics, with demonstrations of how they are used.

To Advertise in Daily Papers

Cleveland has four daily newspapers, two with Sunday issues. Each newspaper will carry paid advertising of liberal proportions at least once a week, so that every day at least once the appeal to the public will be made thru the medium they are accustomed to viewing.

Active in promoting this enterprise to its present status, and in carrying it on to successful conclusion is E. C. Roberts, who for the last several years has been sales promotion manager of the Cleveland Builders Supply & Brick Co. Mr. Roberts for the last nine years has been identified with the company in various capacities, and has made a name for himself in creating a greater demand for all brick, or at least fire safe construction in Cleveland and vicinity. During this period Mr. Roberts has collected a tremendous amount of data on comparative costs of brick and similar construction which will prove of inestimable value in the undertaking now launched.

Bureau Separate Institution

"This bureau will be a separate institution, the sole purpose of which will be to promote public interest in brick or fire proof homes," says Mr. Roberts. "By working along this line it is expected that a marked increase in brick construction will be seen, and the percentage between this and other construction more evenly balanced."

E. C. ROBERTS

Officers and directors of the bureau will be:

Chairman, Frank Aulenbacher, Cleveland Builders Supply & Brick Co.; vice-chairmen, E. G. Barnett, Geist Building Material Co.; Chester M. Harris, Harris-Murray Co.; treasurer, H. F. Kemper, Kemper Material Co.; executive secretary-manager, E. C. Roberts; H. G. Renker, Ideal Products Co.; C. A. Donley, Donley Brothers Co.; Perry P. Quayle, Ohio Coal & Supply Co.; Ben Brugge, Brugge Brothers; William Crangle, Collinwood Shale Brick & Supply Co.

It is expected that at an early date some 25 subscribers will be affiliated with the bureau.

62% More Clay Mined in 1922

Value of Clay Produced and Sold as Such in 1922 Is 38 Per Cent. Greater Than in 1921—Imports Increase 68 Per Cent.

CLAY AVAILABLE for the manufacture of clay products is widely distributed in the United States, and there are clay plants in every state in the Union, according to a report by Jefferson Middleton of the U. S. Geological Survey. The tables here published represent chiefly clay that is mined and sold as clay. The quantity thus sold is small compared with the total output and includes mainly clay used for making high grade pottery, tile and refractory products. The values given for domestic production are values f.o.b. at the mines. The values of imports are those at the principal markets of the countries from which the clay is exported. The values of exports are those at the ports of shipment.

The general increase in prosperity in 1922 had a marked effect on the clay mining industry, the clay sold increasing 52 per cent. in quantity and 38 per cent. in value compared with 1921. Fire clay, which constitutes the largest volume of the clay sold, being 63 per cent. of the total in 1922, showed the largest increase in quantity and value. Every kind of clay as classified in this report, except slip clay, increased in quantity and every kind except stoneware clay increased in value, as compared with 1921. Imports increased in quantity and value about 68 per cent., and exports also increased but not in so large proportion as production and imports. The duties on clay imposed by the act of 1922 are as follows: Kaolin, china, and paper clay, $2.50 per ton; other clays, not specially provided for, crude, $1 per ton, washed or manufactured, $2 per ton; common blue and gross Almerode glass-pot clay, unwrought, $1 per ton, wrought or manufactured, $2 per ton.

For the first time an effort has been made by the Geological Survey to obtain figures showing the production of the so-called diaspore clay of east-central Missouri as distinct from the flint and other clays of that region. According to the returns 13,384 tons of diaspore clay, valued at $109,229, was shipped during 1922. This material is used principally in making high grade refractories and abrasives. A recent article describes the occurrence, composition, and possible supply of this material. Another paper describes the composition and properties of diaspore, bauxite, and gibbsite, which are related minerals.

Domestic clay sold in the United States, 1913–1922, by kinds.

Year.	Kaolin, china clay, and paper clay.		Ball clay.		Slip clay.		Fire clay.	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value
1913	155,211	$803,434	67,134	$237,672	10,902	$24,505	1,820,379	$2,592,591
1914	150,519	843,151	67,927	255,767	8,237	17,731	1,409,467	2,147,277
1915	141,064	781,142	75,348	301,910	7,646	18,774	1,570,481	2,361,482
1916	201,157	1,075,730	89,761	391,152	14,064	47,939	2,057,814	3,708,009
1917	206,334	1,263,799	107,406	569,240	16,972	70,505	2,347,972	5,625,095
1918	179,694	1,459,529	89,896	590,631	13,552	49,898	2,305,033	5,664,064
1919	152,828	1,475,681	65,026	520,849	5,149	17,556	1,755,331	4,628,605
1920	268,203	2,865,407	69,477	584,611	9,006	41,519	[a] 2,261,915	[a] 7,088,049
1921	162,726	1,579,163	54,014	354,565	4,608	14,841	1,195,861	3,560,373
1922	275,675	2,346,095	76,792	440,877	4,050	19,405	1,679,220	4,633,486

Year.	Stoneware clay.		Brick clay.		Miscellaneous clay.		Total.	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons	Value.
1913	153,353	$143,587	158,890	$137,976	282,120	$240,694	2,647,989	$4,180,459
1914	130,383	116,610	199,154	161,852	244,173	214,180	2,209,860	3,756,568
1915	134,297	126,429	101,968	93,863	332,150	288,341	2,362,954	3,971,941
1916	135,958	137,779	97,164	76,854	336,672	314,311	2,932,590	5,751,774
1917	81,352	113,839	93,779	94,703	260,029	305,365	3,113,844	8,042,546
1918	86,800	147,098	(b)	(b)	301,386	421,421	2,976,361	8,332,641
1919	60,236	80,367	(b)	(b)	236,530	367,573	2,275,100	7,090,631
1920	106,350	229,221	(b)	(b)	322,100	467,856	[a] 3,037,051	[a] 11,276,663
1921	86,574	184,540	(b)	(b)	[a] 242,963	[a] 361,818	[a] 1,746,746	[a] 6,055,300
1922	86,866	164,870	(b)	(b)	525,097	725,781	2,647,700	8,330,514

[a] Revised figures.
[b] Included under "Miscellaneous clay."

An interesting development in the clay industry is the utilization of some of the claylike material of the leverrierite-bentonite group, after chemical treatment, as a clarifying agent for mineral oils, with results that are said to be far

Clay sold in the United States in 1922, by States and kinds—Continued.

State.	Stoneware clay.		Miscellaneous clay.[c]		Total.	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
Alabama			4,820	$4,750	60,523	$49,765
Arkansas					176	1,848
California	9,864	$16,864	53,273	85,424	206,740	396,201
Colorado	1,408	3,520	102,749	90,094	148,450	158,621
Connecticut	(a)	(a)	(a)	(a)	(a)	(a)
Delaware					4,203	26,508
Florida					(a)	(a)
Georgia			130,925	131,777	233,828	850,072
Idaho					394	2,410
Illinois	30,154	49,188	568	568	130,323	242,487
Indiana	(a)	(a)	5,089	12,173	45,446	74,288
Iowa			22,887	23,068	22,887	23,068
Kentucky			(a)	(a)	67,591	270,858
Maryland	(a)	(a)	55,950	84,425	72,749	147,969
Massachusetts			59	237	1,012	3,941
Michigan			1,653	4,852	1,653	4,852
Minnesota			19,078	25,287	19,078	25,287
Mississippi					1,080	2,160
Missouri	1,250	1,859			412,128	1,238,622
Montana			3,933	6,000	7,363	11,416
Nebraska					248	890
Nevada			(a)	(a)	(a)	(a)
New Jersey	10,008	41,256	49,798	119,791	313,360	1,206,947
New Mexico					1,681	6,542
New York			5,852	19,223	5,976	20,463
North Carolina	10	10	60	60	14,656	214,622
North Dakota					45	474
Ohio	31,265	46,076	20,718	40,552	235,684	448,677
Oregon	399	1,496	2,889	8,031	3,288	9,527
Pennsylvania	1,868	2,906	44,401	70,016	381,259	1,306,253
South Carolina			50	50	53,577	416,725
South Dakota			100	1,000	100	1,000
Tennessee	20	110	429	964	74,114	362,281
Texas	50	75			3,554	22,601
Utah			1,528	3,570	4,567	20,754
Vermont					(a)	(a)
Virginia			(a)	(a)	13,810	113,828
Washington			455	1,966	6,136	14,745
West Virginia					58,692	94,371
Wisconsin			230	748	230	748
Wyoming			466	7,313	466	7,313
Undistributed	570	1,510	1,187	3,247	40,633	531,380
	86,866	164,870	[d] 529,147	[d] 745,186	2,647,700	8,330,514
Average price per ton		1.90				3.15

[a] Included under "Undistributed."
[c] Includes ardmorite, bentonite, shale, clay for art pottery, asbestos products, blast furnaces, brick, cement, decolorizing oils, drain tile, fireworks, foundries, high-grade tile; hollow ware, modeling, paint, plaster and its products, red earthenware, roofing tile, sewer pipe, stove polish, and terra cotta. Slip clay is also included in this column as a matter of convenience.
[d] These totals include 4,050 tons of slip clay, valued at $19,405, or $4.79 per ton, from Michigan (420 tons. valued at $2,162) and New York (3,630 tons, valued at $17,243).

Clay sold in the United States in 1922, by States and kinds.

State.	Number of active operators reporting.	Kaolin, china clay, and paper clay.		Ball clay.		Firo clay.	
		Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
Alabama	8	220	$660			55,483	$44,355
Arkansas	(a)					176	1,848
California	20	2,683	38,280	6,726	$22,944	134,194	232,689
Colorado	19					44,293	65,007
Connecticut	(a)						
Delaware	3	1,076	14,000			(a)	(a)
Florida	(a)	(a)	(a)				
Georgia	14	100,668	709,745			2,235	8,550
Idaho	(a)					394	2,410
Illinois	17			3,184	8,945	96,417	183,786
Indiana	13					40,324	61,967
Iowa	5						
Kentucky	17			26,148	128,028	41,437	142,680
Maryland	16	5,300	7,400			11,099	55,144
Massachusetts	4					953	3,704
Michigan	4						
Minnesota	(a)						
Mississippi	(a)					1,080	2,160
Missouri	34	1,013	9,810			[b] 409,865	[b] 1,226,953
Montana	(a)					3,430	5,416
Nebraska	(a)					248	890
Nevada	(a)	(a)	(a)				
New Jersey	42			9,314	66,555	244,240	979,345
New Mexico	5					1,681	6,542
New York	6					124	1,240
North Carolina	5	14,586	214,552				
North Dakota	(a)	33	306			12	168
Ohio	57					183,701	362,049
Oregon	(a)						
Pennsylvania	75	44,289	297,197			290,701	936,134
South Carolina	9	53,345	414,855			(a)	(a)
South Dakota	(a)						
Tennessee	11			31,420	214,405	42,245	146,802
Texas	9					3,504	22,526
Utah	6					3,039	17,184
Vermont	(a)	(a)	(a)				
Virginia	3	(a)	(a)			663	2,459
Washington	7					5,681	12,779
West Virginia	5					58,692	94,371
Wisconsin	(a)						
Wyoming	3						
Undistributed	21	52,462	639,290			3,309	14,328
	438	275,675	2,346,095	76,792	440,877	[b] 1,679,220	[b] 4,633,486
Average price per ton			8.51		5.74		2.76

[a] Included under "Undistributed."
[b] These totals include 13,384 tons of diaspore clay from Missouri, valued at $109,229.

Clay sold in the United States in 1922, by uses and kinds, in short tons.

Use.	Kaolin, china clay, and paper clay.	Ball clay.	Slip clay.	Fire clay (including fire-clay dust).	Stoneware clay.	Miscellaneous clay.	Total.
White-bodied ware made from white-burning clays, including china, general ware, chemical porcelain, porcelain electrical supplies, sanitary ware, etc	52,047	32,285	....	14,925	....	....	99,257
Art pottery	531	877	....	904	600	381	3,293
High-grade tile	19,534	18,338	....	10,114	....	250	48,236
Chemical stoneware	....	....	....	798	2,423	....	3,221
Stoneware	412	736	....	558	78,069	80	79,855
Enameling, as coating for granite ware, etc	120	900	110	955	....	....	2,085
Paper filler	104,403	....	....	1,206	....	....	105,609
Paper coating	10,243	....	....	963	....	....	10,243
Rubber	13,779	....	....	....	....	....	14,742
Oilcloth or linoleum	8,008	....	....	....	....	....	8,008
Paint filler or extender	14,457	....	....	692	....	774	15,923
Paint pigment	280	....	....	....	....	78	358
Architectural terra cotta	101	2,822	....	57,237	1,400	17,963	79,523
Asbestos products	267	400	....	10,860	....	3,604	15,131
Plaster and plaster products	4,038	....	....	6,165	....	2,357	12,560
Slip for glazing purposes	....	....	1,585	....	....	....	1,585
Kalsomine	2,824	....	....	46	....	....	2,870
Artificial abrasives	10	160	2,355	984	....	....	3,509
Crayons (for tailors' use, etc.)	505	....	....	....	....	....	505
Chemicals	1,093	....	....	....	....	5	1,098
Pencil leads (graphite)	50	....	....	....	....	....	50
Saggers	6,752	14,335	....	93,900	1,689	7,767	124,443
Pins, stilts, and spurs for potters' use	281	264	....	1,998	....	....	2,543
Wads	....	1,214	....	24,828	....	....	26,042
Gas retorts	....	....	....	617	429	....	1,046
Fire brick and block	2,362	248	....	512,792	358	....	515,760
Fire-clay mortar, including clay processed for laying fire brick	....	....	....	314,586	....	....	314,586
Bauxite and high alumina brick	....	....	....	3,943	....	....	3,943
Glasshouse pots	210	536	....	15,520	....	234	16,500
Glasshouse supplies, blocks, tiles, etc	90	....	....	19,625	....	....	19,715
Zinc retorts	....	....	....	19,175	....	....	19,175
Zinc condensers	....	....	....	15,646	....	....	15,646
Clay crucibles	231	....	....	987	....	....	1,218
Foundry use and steel works for cupola lining, etc	538	....	....	340,981	100	43,568	385,187
Unspecified [a]	32,509	3,677	....	208,215	1,798	448,036	694,235
	275,675	76,792	4,050	1,679,220	86,866	525,097	2,647,700

[a] Includes clay for brick, cement, clarifying oils, gas-stove backs, hollow ware, ink, matches, modeling, peanut coating, phonograph records, red earthenware, refractory cement, roofing tile, sewer pipe, soap, stove lining, stove polish, tanning, and wall paper.

superior to those obtained with natural fuller's earth. This material is also being used successfully in the manufacture of soap. It occurs in large quantities in the far western states and to some extent in other states.

Fine Clay Production Increases

The most striking feature of the industry in 1922 was the large increase in the production of kaolin, china clay, and paper clay, which was 69 per cent. more than the production in 1921 and was the largest on record—more than twice that of any year prior to 1912. The number of states reporting this high grade clay also increased to 14 in 1922, as compared with 11 in 1921.

41 states reported clay sold as such in 1922. The five leading states in the order of quantity sold, were Missouri (16 per cent. of total for United States), Pennsylvania (14 per cent.), New Jersey (12 per cent.), Ohio (9 per cent.), and Georgia (9 per cent.). In all these states except Georgia fire clay is the leading variety reported, constituting 99 per cent. of the output in Missouri, 76 per cent. in Pennsylvania, and 78 per cent. in New Jersey and Ohio.

Production by Uses

Statistics showing the production of clay by uses are necessarily incomplete, as many clay miners do not know the purpose to which their clay is put, but it is believed that the figures given in the table on page 621 are sufficiently complete to serve as a guide in the study of the uses of domestic clays. In considering these figures it should be borne in mind that they represent chiefly the clay sold as clay by the original producers and do not include the much greater quantities of clay that are burned into clay products by those who mine their own clay.

IMPORTS AND EXPORTS.[3]

Clay imported and entered for consumption in the United States, 1913–1922.

Year.	Kaolin or china clay.			Common blue and Gross Almerode glass-pot clay.		All other clays.				Total.	
						Unwrought.		Wrought.			
	Short tons.	Value.	Average price.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
1913	268,666	$1,623,993	$6.04	24,986	$204,911	42,582	$155,693	1,889	$22,178	338,123	$2,006,775
1914	328,038	1,927,425	5.88	16,761	122,325	50,069	195,956	3,232	41,712	398,100	2,287,418
1915	209,132	1,152,778	5.51	8,864	62,569	23,718	90,367	1,343	12,433	243,057	1,318,147
1916	253,707	1,326,684	5.23	2,501	12,134	42,478	163,421	180	1,994	298,866	1,504,233
1917	241,029	1,315,769	5.46	88	709	26,581	123,439	338	2,142	268,036	1,442,059
1918	168,100	1,153,240	6.86	114	983	26,984	163,484	137	1,087	195,335	1,318,794
1919	180,592	1,965,393	10.88	4	133	23,759	187,550	498	4,262	204,853	2,157,338
1920	361,800	3,568,677	9.86	6,837	157,201	34,252	272,524	691	10,267	403,580	4,008,669
1921	162,906	1,546,285	9.49	4,468	77,217	41,421	348,870	120	2,313	208,915	1,974,685
1922	310,136	2,963,420	9.56	7,323	84,415	30,643	246,807	2,468	27,233	350,570	3,321,875

Clay exported from the United States, 1916–1922.

Year.	Kaolin, china clay, and paper clay.		Fire clay.		All other.		Total.	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
1916	(a)	(a)	45,752	$144,552	27,941	$145,970	73,693	$290,522
1917	(a)	(a)	54,023	268,093	29,194	178,764	83,217	446,857
1918	(a)	(a)	60,206	333,880	24,348	192,053	84,554	525,933
1919	(a)	(a)	37,486	262,501	30,983	249,571	68,469	512,072
1920	(a)	(a)	54,125	393,177	66,035	775,222	120,160	1,168,399
1921	(a)	(a)	23,666	177,979	23,779	183,449	47,445	361,428
1922	2,091	$27,840	24,391	169,664	21,194	240,068	47,676	437,572

(a) Not separately classified prior to 1922.

[3] Figures of imports and exports compiled by J. A. Dorsey, of the U. S. Geological Survey, from records of the Bureau of Foreign and Domestic Commerce.

* * *

BOOK TELLS HOW TO OWN HOME

A real aid to home builders is a new publication entitled, "How to Own Your Home." It carries a foreword by Herbert Hoover, Secretary of Commerce, and was compiled by John M. Gries and James S. Taylor, of the Division of Building and Housing, in answer to the request of a large number of national civic organizations that the subject should be authoritatively covered to encourage home owning in the interest of good citizenship. The booklet, planned to give simple, common-sense information to the person of moderate means who would possess a home, is the result of collaboration and approval by more than fifty civic bodies and experts interested in developing a sound social and economic system through the home.

Hoover Tells Value of Home

In declaring that the public recognizes the advantage of owning their own homes and that business groups, especially, are viewing this proposition in a new light, Secretary Hoover said in the foreword:

"Maintaining a high percentage of individual home owners is one of the searching tests that now challenge the people of the United States," Secretary Hoover asserted in urging "the own-your-home" idea. "The present large proportion of families that own their homes is both the foundation of a sound economic and social system and a guarantee that our society will continue to develop rationally as changing conditions demand."

Statistics published in the book show the percentage of home owners in the United States, and the revelation made by them also prompted the Department of Commerce to publish such information for public use. In 1900, 461 of every 1,000 families in America owned their own homes, while in 1920 the percentage had dropped to 456 in each 1,000. Of the 48 states only 20 showed an increase, while the District of Columbia likewise gained.

The ten leading states in respect to home ownership in 1920 were, in order, North Dakota, Wisconsin, South Dakota, Idaho, Minnesota, Montana, Utah, Maine, New Mexico, and Michigan.

One of the outstanding problems confronting the home seeker, the handbook points out, is that of financing the acquisition of property.

"It is hoped that prospective home owners may find whether they are on the right track by checking their plans with these suggestions and that the home so acquired will cause them no regrets," the handbook comments.

* * *

IMPROVING RAIL FACILITIES

The railroads placed in service during September, 18,519 new freight cars and 380 new locomotives, making a total of 134,636 new cars and 2,963 new locomotives installed during the year. The carriers had on contract, October 1, for future delivery, 64,601 cars and 1,242 locomotives.

Conditions That Affect Your Business

The index numbers of construction costs and material costs in the building industry made uniform declines in September. Douglas-fir lumber production was 542,110,000 board feet, as against 537,185,000 feet in August and 477,222,000 feet a year ago. Lumber prices declined. Oak-flooring production was 28,546,000 feet as against 32,429,000 a month previous and 23,903,000 a year ago, while unfilled orders of 32,873,000 feet were on hand as against 27,355,000 feet at the end of August and 35,957,000 feet a year ago. Cement production of 13,109,000 barrels compares with 11,424,000 barrels a year ago, and stocks of 5,492,000 barrels compare with 4,724,000 barrels held last year.

Bituminous-coal production was 46,175,000 tons in September as against 48,864,000 tons in August and 40,964,000 a year ago. Anthracite production totaled 2,910,000 tons as against 8,868,000 tons in August, due to the strike. Both beehive and by-product coke declined in output as compared with August. The wholesale price of chestnut anthracite averaged $11.13 per ton as against $10.63 in August, while coke and bituminous were about the same as in August.

Index numbers of industrial production, taking the average 1913 production as 100, show declines from August as follows, pig iron from 134 to 122, steel ingots from 146 to 131, bituminous coal from 123 to 116, and cotton consumption from 102 to 100. Based on the 1913 average as 100, unfilled orders of the U. S. Steel Corporation declined from 92 in August to 85 in September and liabilities of business failures from 151 to 125, while sales of mail-order houses increased from 198 to 231.

The visible supply of wheat at the end of September totaled 100,651,000 bushels, as against 78,958,000 a year ago, corn amounted to 2,516,000 as against 13,952,000 a year ago and oats to 16,514,000 as against 35,968,000 a year ago. Prices of all grains increased over August and wheat flour also advanced.

Surplus of idle freight cars at the end of September averaged 41,745 cars as against 66,559 a month previous and 5,843 a year ago, while car shortage was 15,331 cars as against 9,441 in August and 130,325 a year ago. Car loadings averaged 1,037,018 cars per week in September as against 1,039,570 in August and 934,816 a year ago.

Employment in 1,428 factories totaled 2,030,000 workers in September as against 2,032,000 in August and 1,767,000 a year ago.

The wholesale price index number compiled by Dun's was 158 in September, based on 1913 prices as 100, as against 155 in August, while Bradstreet's price index number was 142 as against 140 in August. The Department of Labor index rose from 150 to 154, based on 1913 as 100.

Sales of leading mail-order houses totaled $26,052,000 in September as against $22,334,000 in August and $21,464,000 in September, 1922. Sales of leading ten-cent stores were $25,198,000 as compared with $25,551,000 in August and $22,620,000 a year ago.

Debits to individual accounts and bank clearings increased over August for New York City, but outside New York were about the same. The Reserve ratio of the Federal Reserve banks was 76.4 as against 77.5 at the end of August and 78.4 a year ago.

Business failures amounted to 1,225 in September as against 1,319 in August and 1,566 a year ago. Liabilities defaulted totaled $28,488,000 as against $34,335,000 in August and $36,908,000 in September, 1922.

SUGGEST LARGER BRICK

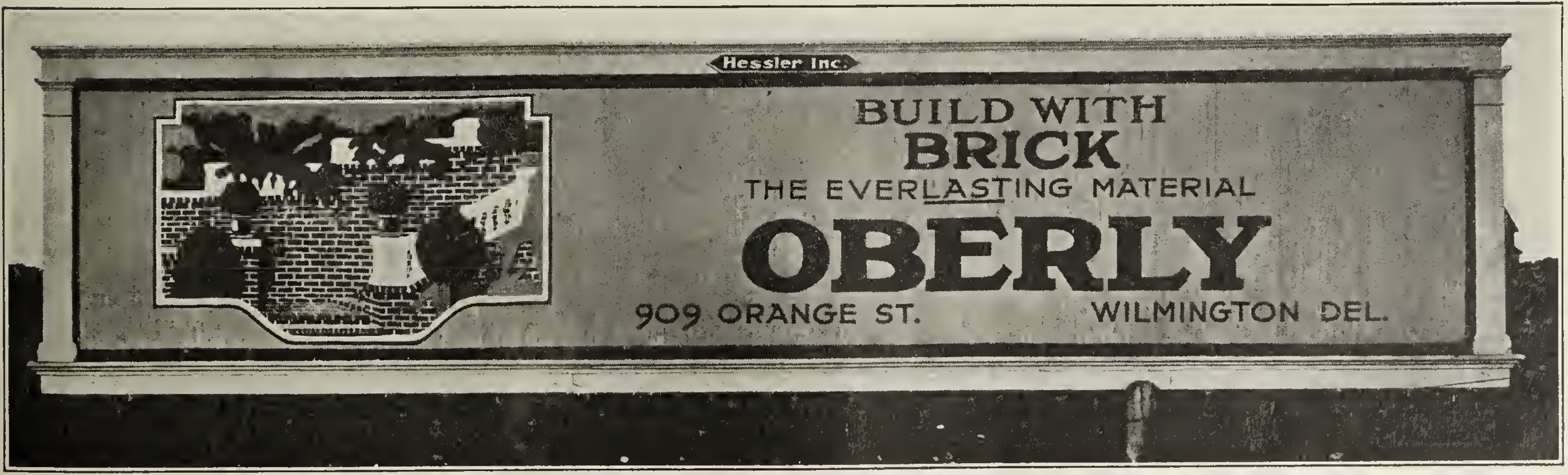
"Among many suggestions put forward to help speed up building operations is one that brick should be made of a larger size," says a recent issue of the Boston Traveler. "It is pointed out that it would take very little more time to lay brick which were, say, half as large again as the usual type, and consequently much more ground would be covered in any given time. On the other hand, a great amount of trouble would arise in other directions. All the architects' and builders' calculation tables would need revision—an immense task—and so would the many building laws now in force which are based on the 'standard' size brick."

Brick manufacturers should not worry over reports of this nature as the 2¼x3¾x8 inch size has now definitely been established as standard thruout the country.

* * *

OBERLY HAS ATTRACTIVE SIGN

Here is another type of signboard advertising brick, different from the one published in the October 2 issue of



Very Attractive Sign Board Advertising Brick Built by James B. Oberly of Wilmington, Del.

Brick and Clay Record. It is a very beautiful and attention-compelling piece of advertising showing on the left side a bit of artistic and attractive face brickwork. The sign is on a well traveled highway in Delaware and advertises James B. Oberly brick. Such advertising has as a rule proven profitable.

* * *

STEVENS' EXCELLENT BRICK DISPLAY

A most interesting letter, together with a photograph of a remarkable display of clay products has been received by Brick and Clay Record from Frederick B. Stevens of Detroit, Mich. Mr. Stevens was moved to send the letter and photograph upon seeing in the October 2 issue of Brick and Clay Record a photograph of the very excellent design of brick panels built by the California Clay Co. on one of California's main highways. Mr. Stevens in his letter calls attention to some advertising psychology and brings out some excellent points regarding display advertising which it will be well for clay products manufacturers to bear in mind when constructing show exhibits, sign boards or other types of advertising. Brick and Clay Record would be glad to get comments from other manufacturers who have built clay products displays to see whether Mr. Stevens' opinion coincides with others. Mr. Stevens' letter is reprinted herewith:

"On Page 481 of your October 2 issue is given a somewhat new and very excellent way of advertising.

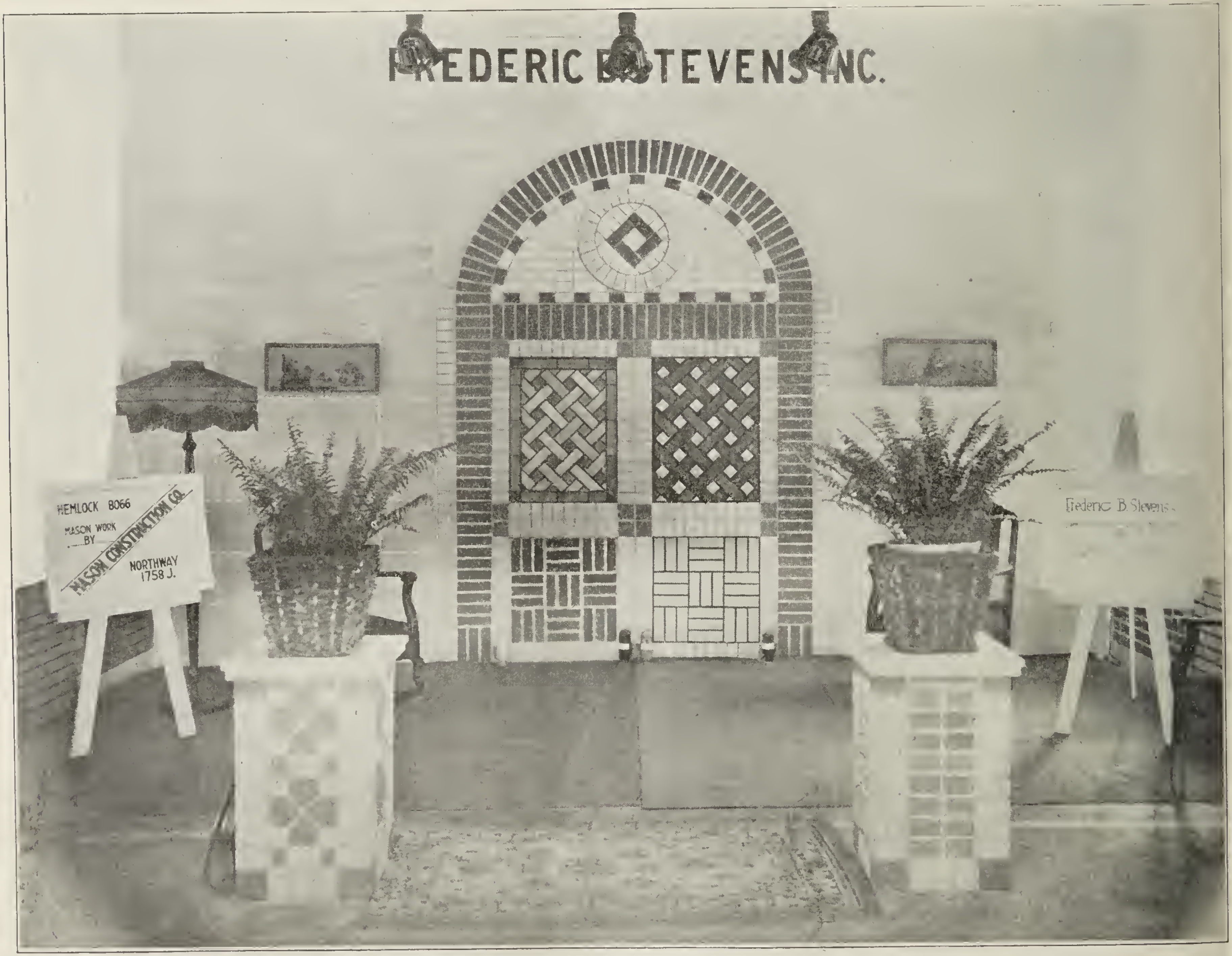
"The sign of the 'California Clay Co.' must be most attractive and on 'the main California highway' must attract a great deal of attention and become one of the best kinds of publicity.

"What do you think of the plan, when making panels, of inserting a dark panel between two cream colored or gray panels and thereby distributing the harmony of the entire section? At first view would not the sight be concentrated on the most prominent, that is, the dark panels, to the detriment of the lighter ones? In other words, is that a really artistic color display and in accord with harmonies of color?

"If there is a direct contrast, and that may be claimed for some purpose, there is the superior effect of one which causes the inferior aspect of the other.

"I am going to send you a photograph, under another cover, of my display, at 'The Builders' Show' which took place in Detroit in March of the present year. Where space in an exhibition building is sold at a high price, the natural instincts of economy require that the most be made of the space available. You will observe that I am showing a large panel made up of smaller panels and wherein the same criticism which I have suggested might apply. Each panel, however, is so surrounded that the eye may be concentrated upon the panel proper or that which is inside of the 'frame.'

"The brick were laid by a Russian Jewish mason, Abraham Rodroff, who has had a great deal of experience in Japan. The two upper panels, he told me, were laid after the Japanese method. You will observe the picture effect of brick and mortar which really gives the impression of interlacing ribbons of cloth wherein one, apparently, passes under and over another. This man, the mason, made his own design, and went ahead after his own notion and when the work was completed (I did not see it before) I was struck with admiration of his artistic execution.



A Brick Display of Singular Beauty. Note How the Two Center Panels Give the Impression of Being Woven. This Is Very Clever Work.

"In any city one may see such architectural conglomerations of Queen Anne periods and Mary Ann periods all combined in one house that, too frequently, the whole effect is ludicrous. You have a good publication and you are doing much to elevate the industry."

* * *

CAHILL ENTERTAINS EASTERN BRICK MEN

The various members of the Brick Manufacturers' Association of Eastern Pennsylvania, New Jersey and Delaware in conference recently, reported in substance that brick manufacturers look for brisk fall business and are prepared to take good care of it. Following the conference, which had its headquarters at the Chamber of Commerce, Trenton, N. J., the manufacturers visited the plants of the Trenton Potteries Co. and Lenox, Inc. The brickmen were entertained by T. A. Cahill of the Independent Brick Co., Trenton, at Hillwood Inn at luncheon. The members of this association meet once a month for the discussion of trade conditions and business betterment. Frank Gery of the Glen-Gery Shale Brick Co., Reading, Pa., is president and William Conway, Jr., of Philadelphia, secretary. In discussing the present situation relative to the brick industry, the president said that while orders in August were rather slack as compared with previous months, the outlook for all business was very good in the states represented by the organization. He stressed the fact that there is a growing tendency to use more brick during winter months than previously.

* * *

Standard Sizes and Weights of Hollow Tile Adopted

AS A RESULT of a general conference of manufacturers, distributors, and users of hollow building tile held at the Department of Commerce on October 19, 1923, under the auspices of the Division of Simplified Practice, it was unanimously agreed and adopted that definite weights and sizes of that commodity be considered as the standard of practice for the industry for one year effective January 1, 1924.

A survey of variety in sizes, dimensions, and weights reported at the preliminary conference of manufacturers held at the Department on June 19, 1923, showed 36 different sizes, each made in a wide variety of weights. A compilation and review of the figures brought out by this survey was made by the Standards Committee of the Hollow Building Tile Association and was used as a basis for adoption at the general conference.

Discuss 12x12x12 Size

Mr. Hudson of the Division of Simplified Practice opened the conference as presiding chairman and gave a brief outline of the accomplishments of other industries in the building material field who have effected economies thru the application of Simplified Practice to their commodities.

The conference decided to vote on the list submitted by sections and the discussion opened on the 12x12x12 standard load-bearing wall tile for end construction. It was contended that this size did not permit of combined brick and tile construction for the city of Washington. It was brought out by the tile manufacturers that this size would be cut to lengths which would adequately meet the requirements of any construction and that its failure to do so in Washington was due to the fact that builders in that vicinity were not using the standard size brick as adopted at the brick conference held at the Department of Commerce on June 21, 1923.

Five Per Cent. Leeway Permitted

H. R. Straight of the Association explained to the conference that the last four units of tile as listed under standard partition tile were under a course of tests at the Bureau of Standards and their findings would determine whether they would be classed as floor tile of standard weights. The remaining groups were voted on and unanimously adopted.

After considerable debate as to tolerance for weights and dimensions, it was unanimously passed that not more than five per cent. tolerance over or under would be allowable for weights and three per cent. over or under for dimensions covering length, width, and height.

January 1, 1924, was set as to the date the recommendation should become effective and to remain in force for a period of one year from that date.

To Appoint Standing Committee

A standing committee of the conference consisting of three representatives of manufacturers, three of distributors, and three of consumers was decided upon as a means of providing a follow-up to insure the adoption of the simplifications embodied in the recommendation of the conference; to effect a greater degree of contact and cooperation between the Department and the industry; and to consider further eliminations or substitutions in the existing varieties of tile. The personnel of this committee will be announced later.

The sizes and weights here given were approved by Committee C10 on hollow tile of the American Society for Testing Materials as part of tentative specifications on hollow building tile.

The following list gives in detail the weights, sizes, and types of tile adopted at the conference:

Standard Load Bearing Wall Tile

End Construction	Cells	Weight (Lbs.)
3¾ x 12 x 12	3	20
6 x 12 x 12	6	30
8 x 12 x 12	6	36
10 x 12 x 12	6	42
12 x 12 x 12	6	48
Side Construction		
3¾ x 5 x 12	1	9
8 x 5 x 12	2	16
8 x 5 x 12 ("L" shaped)	.	16
8 x 6¼ x 12 ("T" shaped)	4	16
8 x 7¾ x 12 (square)	6	24
8 x 10¼ x 12 ("H" shaped)	7	32

Standard Partition Tile

3 x 12 x 12	3	15
4 x 12 x 12	3	16
6 x 12 x 12	3	22
8 x 12 x 12	4	30
10 x 12 x 12	4	36
12 x 12 x 12	4	40

Standard Split Furring Tile

2 x 12 x 12	.	9

Standard Book Tile

		Lbs. per sq. ft.
3 x 12 x 18 to 24	.	18

PERSONNEL IN ATTENDANCE

Bevier, P. H., Hollow Building Tile Association, New York City.
Brady, Wm. G., 439 Treasury Building, Washington, D. C.
Cartwright, Frank C., Division of Building & Housing, Department of Commerce.
Dailey, E. W., North Iowa Brick & Tile Co., Mason City, Ia.
Deckman, Chas. G., Medal Paving Brick Co., Cleveland, Ohio.
Dixon, C. W., Columbus (Ga.) Brick & Tile Co.

Downer, H. C., The Malvern (Ohio) Fire Clay Co.
Ginder, J. W., Federal Specification Board, Treasury Department, Washington, D. C.
Graham, Bert J., Denison Interlocking Tile Corp., Cleveland, Ohio.
Green, A. L., American Railway Association, Chicago, Ill.
Healy, John P., Building Officials Conference, Washington, D. C.
Holden, P. E., Asst. Mgr., Fabricated Production Department, United States Chamber of Commerce, Washington, D. C.
Huse, Frank J., Chief Engineer, Hollow Building Tile Ass'n., Chicago, Ill.
Hutton, Jr., Wm., Troy (N. Y.) Fireproofing Co.
Ingberg, S. H., American Society for Testing Materials, and National Bureau of Standards.
Keasbey, H. M., National Fire Proofing Co., Fulton Bldg., Pittsburg, Pa.
Peace, T. M., Alfred, New York.
Rommel, Edward, Consolidated Clay Products Co., Canton, Ohio.
Sleeper, J. S., Secretary, Hollow Building Tile Ass'n., Chicago, Ill.
Snow, W. A., American Clay Products Co., N. Y. City.
Straight, H. R., Hollow Building Tile Ass'n., Adel, Ia.
Sturtevant, E. R., Hollow Building Tile Ass'n., Dallas, Tex.
Thomas, H. B., National Fire Proofing Co., N. Y. City.
Wallace, R. G., Hollow Building Tile Ass'n., Fulton Bldg., Pittsburgh, Pa.
Whitacre, J. B., Whitacre-Greer Fireproofing Co., Waynesburg, Ohio.
Wilson, Wm. E., Mason City (Ia.) Brick & Tile Co.
Wright, Francis, H., Hay-Walker Brick Co., Pittsburgh, Pa.
Yepsen, V. L., Anness & Potter Fire Clay Co., Woodridge, N. J.
Division of Simplified Practice, Department of Commerce.
Hudson, R. M.
Colwell, H. R.

* * *

Driving Home the Lesson of Tokio and the Berkeley Fire

TOKIO, the city of frequent earthquakes, built itself largely with monolithic construction, totally unsuited to withstand great shocks. Berkeley, Cal., bordering an immense forest preserve, built itself largely of inflammable materials, in the face of an ever-present fire hazard which periodically breaks out in the dry wooded mountains of California.

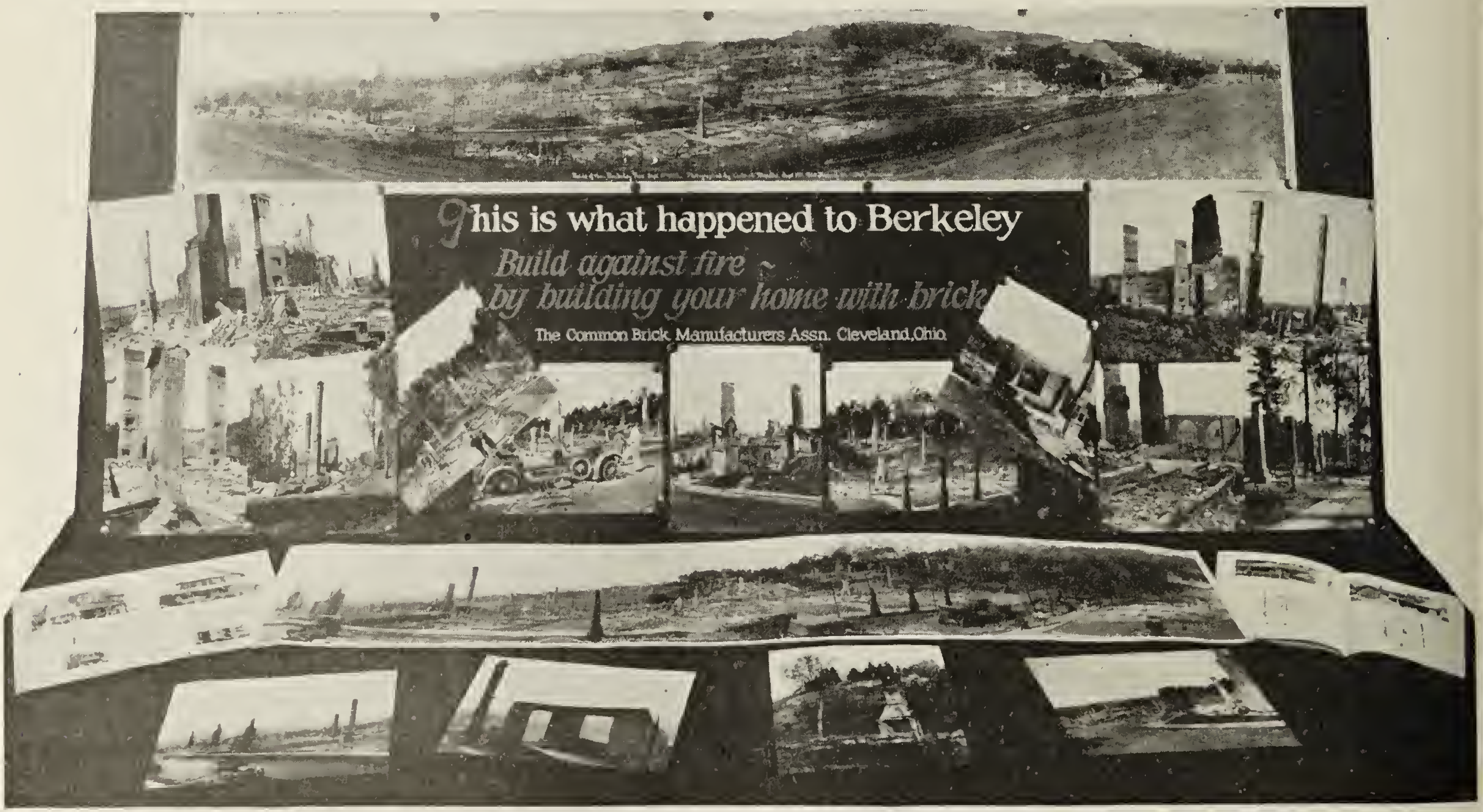
Today, Tokio, Yokohama, and 45 entire blocks of Berkeley are destroyed. Brick walls and chimneys standing above the charred ruins of what were, so short a time ago, beautiful structures, constitute the greatest argument that ever has been put forth for building with brick as a protection against both fire and shock. The brickwork of burned Berkeley and the standing masonry in shaken Japan show pitilessly the folly of cheap building to avoid a slight increase in initial expense.

Berkeley Fire $10,000,000

In Berkeley a lone chimney marks the place where each of 1,600 residences stood. The board of fire underwriters of San Francisco has estimated the building loss at $10,000,000, while the additional loss of personal property which could not be taken from the burning homes is said by them to be at least $7,000,000. Cherished, irreplaceable, personal belongings are lost forever because they were not protected by brick walls.

The brick manufacturers of California have been quick to point the moral presented by the monumental chimneys. At present they have under way a campaign of education in the use of brick which they have launched thruout the state thru their organization, the California Common Brick Manufacturers' Association. Leading manufacturers of California met in San Francisco immediately following the disaster at Berkeley in September. They visited the Berkeley ruins and made a thoro investigation of the showing made by brick. They also arranged with photographers and engineers in Japan to submit to them a detailed survey of the manner in which brick withstood the disaster there. Then they planned their campaign of brick education directed to the public, architects, and the building trades.

The aims of the recently formed association have been concisely expressed by Walter R. Simons of Los Angeles, president. "Use of brick in construction never has been more widespread than it is today," he declared, "but the public must not be allowed to overlook the frightful lessons taught by these two disasters. Our campaign is not to be one of mere propaganda. It is the performance of a civic duty. We


This is what happened to Berkeley
Build against fire ~ by building your home with brick
The Common Brick Manufacturers Assn. Cleveland, Ohio.

The Common Brick Manufacturers Association Placed This Display of Pictures of the Berkeley Fire in the Show Window of a Bank in Cleveland During Fire Prevention Week. The Pictures Are a Silent, But Eloquent, Lesson on the Folly of Inflammable Construction

must insist that owners, architects, and builders face their responsibility to the public in selecting the materials they use."

Two strong association advertisements which appeared immediately after the fire were entitled "The Silent Sentinels of Berkeley" and "It Must Not Happen Again!" These advertisements were illustrated with photographs of the Berkeley ruins vividly demonstrating the ability of brick to withstand fire. The advertisements urged those about to rebuild to study the ruins before selecting building materials. Those who are about to build new homes are asked to insist on authentic information regarding the cost of brick, its possibilities and its advantages.

Notification has been sent out by the Common Brick Manufacturers' Association of America to all members that the entire set of pictures shown here, and which illustrate in a very complete way the disaster of the Berkeley fire, can be obtained for $20.00 (cost to the association). Brick manufacturers might wish to use these as a window display or in some other advertising way.

⁂

"BIG GUNS" IN INDUSTRY FORM COMPANY

With a personnel that has been prominently identified with the clay products industry for many years, the A. S. Reid & Co. of New York, Inc., has been formed with a capital of $100,000 under the laws of the state of New York for the distribution, manufacture of face brick, hollow tile and other clay products, with headquarters at 1265 Broadway, New York City. A. S. Reid & Co. have affiliated companies in Boston, Buffalo, Newark and Philadelphia.

The officers of the company are A. S. Reid, president and treasurer. Mr. Reid has been a large dealer of clay products, especially in Newark and Philadelphia, and at one time was president of the Face Brick Dealers' Association of America. John H. Black is vice president of the company. Mr. Black is also president of the Jewettville Clay Products Co., ex-president of the American Face Brick Association and has maintained a large retail business in Buffalo. Edwin F. Knight is assistant treasurer of the company. He at one time was sales manager of the Bradford (Pa.) Pressed Brick Co. and president of the Buffalo (N. Y.) Clay Products Co Recently he has been vice president and manager of the A. S. Reid & Co. at Newark. Chas. T. Harris is secretary of the company. He was formerly sales manager of Fiske & Co. and later secretary of the Hollow Building Tile Manufacturers' Association and the National Builders Supply Association. W. Joseph Degenhart is fifth director of the company. He has been a co-partner of Mr. Black in his activities in Western New York.

⁂

AMERICAN GRAPHITES O. K. FOR USE

As the result of experiments conducted by the Department of the Interior, thru the Bureau of Mines, it is indicated that American graphites, bonded with American clays, can be used in substitution for foreign graphites in the manufacture of crucibles for the melting of steel.

In the past, American crucible makers have given preference to graphite imported from Ceylon and Madagascar, the Ceylon graphite having been preferred, when available. In the Bureau of Mines experiments, made under the direction of the Ceramic experiment station, Columbus, Ohio, graphites from Alabama, Texas, Montana, New York, and Canada were tested in comparison with graphites from Ceylon and Madagascar. When all factors were taken into consideration, the Texas and Alabama graphites gave superior service to those from foreign lands. The analysis of the steel after the first melts showed that the Texas and Alabama graphites carbonized the steel less than did the graphites from Ceylon. This low-carbonizing feature is important because it permits the production of a steel of more nearly the desired analysis.

A preliminary report of these experiments is given in Serial 2512, "Graphite from steel-melting crucibles," by R. T. Stull and G. A. Bole, which may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

The Convention Box

December 4, 5 and 6.—American Face Brick Association, French Lick Springs Hotel, French Lick, Ind.

December.—National Paving Brick Manufacturers' Association, plans not definite.

January.—Hollow Building Tile Association, Chicago, Ill., plans not definite.

February 4, 5, 6, 7 and 8.—American Ceramic Society, Atlantic City, N. J.

February 11, 12, 13, 14, 15 and 16.—Biltmore Hotel, Los Angeles, Cal.

February 13 and 14.—Canadian National Clay Products Association, Prince George Hotel, Toronto, Ont.

SOUTHERN GROUP IS LIVE BUNCH

Some fine publicity was secured for the face brick industry when the meeting of the Southern Group of the American Face Brick Association at New Orleans was announced on the front page of the Journal of Commerce of that city. The Southern Group, of which A. B. Adams, general manager of the Key-James Brick Co. at Chattanooga, Tenn., is chairman, is one of the livest of all local organizations, and generally has a splendid attendance at its meetings.

The October meeting was held on October 17 in New Orleans and at this meeting a dinner was given to New Orleans architects. Representatives from every daily paper in New Orleans were present at this dinner. An interesting program was offered, in which Messrs. B. Mifflin Hood, L. L. Stephenson, W. E. Dunwody and John W. Sibley took part. On behalf of New Orleans architects, Col. Allison Owen, of the firm of DiBoll & Owen, made an extremely interesting address. Following these speeches, the film showing the manufacture of face brick, which was put out by the American Face Brick Association, was shown.

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REFRACTORIES THAT ARE IMPERVIOUS TO CARBON MONOXIDE

Large-scale experiments with an electrothermic dry distillation process for the treatment of zinc ores, recently undertaken by the Mississippi Valley Experiment Station of the Bureau of Mines, Department of the Interior, were hampered by the rapid disintegration of condenser linings made of ordinary firebrick. A study of the problem developed that the action of carbon monoxide was largely responsible for the disintegration, due to the increase in volume caused by carbon deposition around particles of iron oxide contained in the refractory material. Thus the trouble can be avoided by the use of iron-free refractory material. Silica brick or high-grade fire brick free from iron were found to be satisfactory. Results of these experiments have widespread application as refractory brick must withstand the action of carbon monoxide gas when used in coke ovens, in iron-blast furnaces, in producer gas flues, and in the checker work of regenerative furnaces fired with producer gas.

How Good Silica Brick Are Made

Part 2

Treating Principally of Mixing Lime with Mud and with Molding

E. E. Ayars

Chairman Refractories Division, American Ceramic Society

ONE OF THE DIFFICULTIES of silica brick manufacture is the proper control of lime content. The best quality of high calcium lump lime is purchased in carload lots at such intervals that a fresh supply is always available. A typical analysis of fresh burned lime furnished by middle western producers is as follows:

	Per Cent.
Calcium oxide	96.44
Silica	1.26
Iron and alumina	.45
Magnesia	.88
Loss on ignition not over	1.50

Some brick manufacturers maintain a plant laboratory and samples of lime from each car received are analyzed for calcium oxide content. Daily samples from stock may also be taken to keep an accurate check on the condition of the lime. Lime in storage slakes rapidly and the amount of moisture absorbed must be taken into account in weighing up the batch.

A. S. T. M. Specifications for Lime

The American Society for Testing Materials has issued specifications on lime for silica brick making which place the lower limit of available calcium oxide at 92 per cent. Almost no lime is available which meets this specification when the material reaches the brick plant, as lime in transit will average to lose one per cent. of soluble calcium oxide each day. Lime as received usually contains from 80 to 88 per cent. of soluble oxide.

A tradition among practical brick manufacturers that air slaked or hydrated lime is not suitable for brick manufacturing has upon investigation been found to be without foundation. Actual tests were run and brick made of slaked and hydrated limes showed up as well as brick made from quick lime. The amount of these limes used was increased to provide the proper percentage of calcium oxide in the brick mixture and a commercially good product was secured.

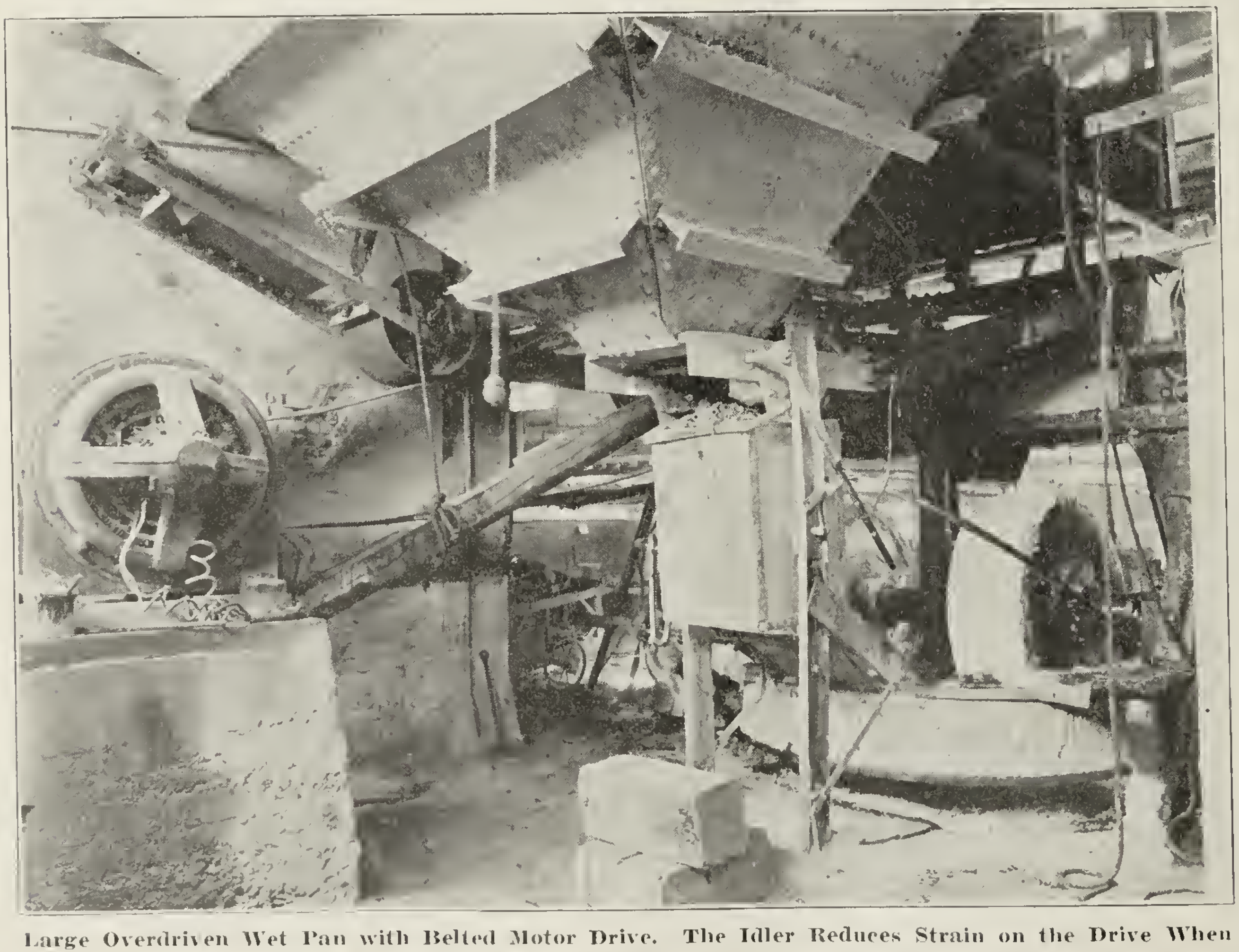
Figuring Weight of Lime to Be Added

In figuring the weight of lime to add to the batch it is customary to use the amount of soluble oxide as a basis. There is always some insoluble lime present which, being suspended in the solution, is carried into the pans. An analysis of the mud shows a higher lime content than the figures would indicate should be expected. This insoluble lime is just as active in the brick during the firing period, as the soluble lime. Variations of two or three tenths of a per cent. are noted as a result of the unavoidable inclusion of this insoluble material and should really be considered in figuring the batch.

The quantity of lime used varies somewhat with the class of brick made and the raw material used. It is generally understood that a lime content of less than 1.8 per cent. will not yield a commercially strong brick. The upper limit is considered to be 3.0 per cent., as any excess over and above this will not contribute additional strength to the brick, nor increase the amount of inversion from quartz to the lower forms of silica. Two per cent. of lime may be taken as the average amount in standard brick. Coke oven builders specify 2.25 per cent. With the finer grind and larger percentage of lime the amount of inversion in coke oven brick averages slightly higher than in standard brick.

Lime has no appreciable effect on the fusion point of silica brick unless present in quantities of five per cent. or over.

Some variations in lime content of the brick mixture are noticeable from pan to pan. The weights of quartzite held in the automatic weighing hopper often vary as much as 100 pounds, while the same quantity of lime is delivered to the



Large Overdriven Wet Pan with Belted Motor Drive. The Idler Reduces Strain on the Drive When Charging the Pan. Notice the Charging Box and Sloping Bottom of Storage Bin pan each time. The hoppers get out of adjustment easily and either stick or close prematurely, which accounts for the varying quantities of rock fed to the pan.

One of the reasons for the long wet pan grind, common in the industry, is the necessity for thoroly mixing the lime thru the batch. The apparent failure of the concrete mixer for tempering silica mud is probably due to the difficulty of producing an intimate mixture on account of the physical character of the ingredients.

Not all manufacturers are using commercial quick lime in their process. At least one is said to be using hydrated lime. Another uses a home burned lime of good quality, on account of the higher cost of commercial lime in that locality. In each case brick of a high quality are made.

An Overhead Carrier for Mud Distribution. The Mud Box Is Lifted by Steam or Air Hoist and Attached to Trolley.

Lime is usually prepared for the batch in special sheet steel slaking tubs. These tubs have a stirring device consisting of a horizontal shaft to which are fitted steel paddles. The shaft revolves slowly, the paddles dipping into the lime and water at the bottom of the tub.

The slaking process requires about one hour and four tubs are necessary to feed one wet pan, as the usual pan capacity for the regular grind is four pans per hour. The lime room is located above the pan room.

Under each battery of four tubs a trough is provided to receive the milk of lime, and a discharge pipe leading to the pan is located near one end. An eight mesh screen is placed over the discharge pipe to prevent the passage of debris and unburned fragments of limestone to the pan. Each charge of lime is carefully flushed out of the tub and trough and little is lost to the pan. However, a casual glance at the lime room equipment of any plant will convince one that there is much to be desired in the preparation and delivery of lime to the pans. Tubs, paddles and trough become coated with hardened lime and it is fair to assume that some of the responsibility for variations of lime content in the brick rests with the lime room method.

Design of Wet Pans

There are several good wet grinding pans made. The variations in design are confined mostly to the frame, drive and method of emptying. Pans in general use may be either under-driven or over-driven. They vary from seven feet to eight feet six inches in diameter, but the best grinding and mixing results are obtained with pans not exceeding eight feet in diameter. Muller tires vary somewhat in width and the average may be taken as 14 inches. The weight of each muller wheel and tire complete is about eight thousand pounds. Pan parts subject to the greatest wear are the false bottom, circle plates, pan rim, muller tires and scrapers. These parts are furnished in two per cent. manganese steel. This steel gives the longest wear and has the lowest replacement cost per ton ground of any material available.

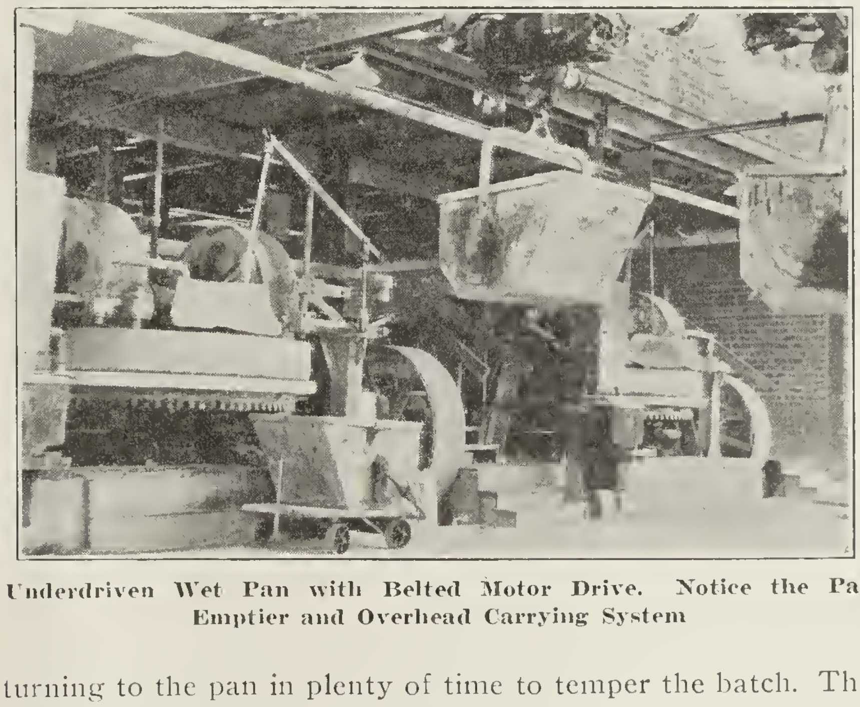
The Under-Driven Wet Pan

The under-driven wet pan, being easily accessible for repairs, is a more desirable machine than the over-driven pan. The only difficult repair to an under-driven pan is the replacement of the ring gear. A split gear is used and occasionally trouble is encountered in fitting. A poorly fitted ring gear gives a high tooth effect in operation, increasing wear on the bearings and placing undue strain on the drive.

Pans are driven either from a line shaft or by individual electric motors. The customary drive on under-driven pans is the electric motor and silent chain. This unit is also used with over-driven pans to some extent, but these are usually driven from a line shaft, the power being transmitted by leather belts. On account of the difficulties encountered in layout the belted line shaft drive is seldom seen with under-driven pans. The average speed of wet pans is 35 revolutions per minute.

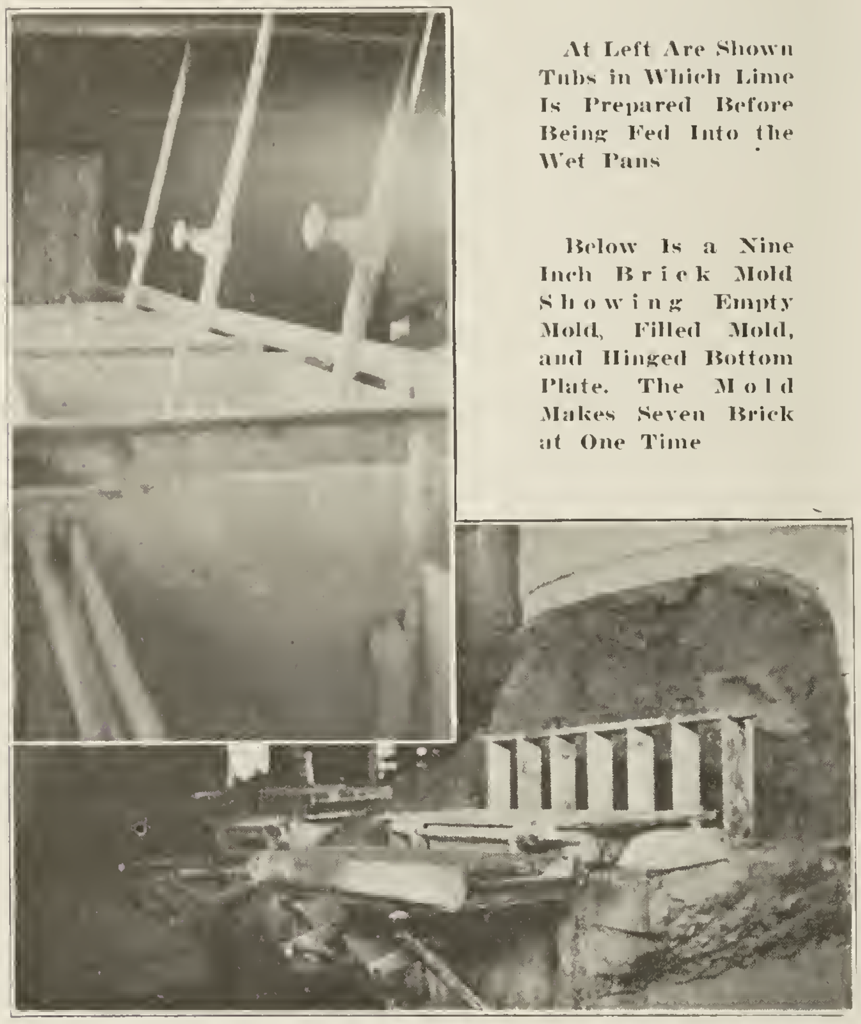
Mud Distribution

Bins are located directly over each pan, the outlet being into an automatic weighing hopper. Mud distribution is accomplished in several ways, depending on the nature of the pan equipment and layout of the plant. Many plants are so arranged as to permit an elevated position for the pans over the tanks or tables. This plan saves considerable labor as the pan tender discharges the pan directly into the tank. Provision is also made for delivering mud to several distant tables by means of belt conveyors, electric mule and dump car, electric cable hoist and dump car or by an overhead carrier and dump box. Belt conveyors, the electric mule and the cable hoist are used in connection with pans fitted with emptiers, while the overhead carrier is best adapted for service with pans emptied by hand. In the latter case the dump box rests on the floor while filling and is elevated by a compressed air or steam hoist for hooking to the carrier. The pan tender starts the next batch grinding and then pushes the dump box to a table or tank and empties it, returning to the pan in plenty of time to temper the batch. The capacity of boxes or cars corresponds to that of the pans and varies from 1,000 to 1,500 pounds, depending on the size of the pan.



Underdriven Wet Pan with Belted Motor Drive. Notice the Pan Emptier and Overhead Carrying System

No silica brick plants producing large tonnages have sufficient grinding capacity to supply the molders without night grinding and storage of mud. Some mud must be stored in the nine-inch tanks for slop mud molders and on the tables for shape molders. Water in the mud gradually works toward the bottom of the mass and makes it too soft for molding, while the top becomes stiff and dry. To compensate for this the first batches mixed for storage are made dryer than usual, while the last batches placed in the tank contain more water than would ordinarily be required.



At Left Are Shown Tubs in Which Lime Is Prepared Before Being Fed Into the Wet Pans

Below Is a Nine Inch Brick Mold Showing Empty Mold, Filled Mold, and Hinged Bottom Plate. The Mold Makes Seven Brick at One Time

The sand added to cut the plasticity of the mud also helps to hold the water suspended in the mixture and prevents it working to the bottom while the mud is in storage. Mud stored on tables may be covered with wet sacks and molding difficulties are somewhat reduced, especially as this material is to be used for hammered shapes and variations in the temper of the mixture do not make quite so much difference as it does in the case of slop molding. The softer the mud is the easier it molds, but the brick do not stand up and when the inspector strikes them out the molder will protest. Slop molders are rapidly disappearing. The work is hard on the men's hands and wrists and they will not stick to it. As a consequence more and more standard brick are being made by hammer turns, while concerted efforts are being made to develop machinery which will eliminate hand molding of standard brick altogether.

Molding of all kinds of high grade fire brick has very generally been done by hand. In some cases this method has been followed on account of its traditional effect on the quality of the ware. In other instances the physical characteristics of the raw material have been such as to necessitate hand molding. The latter case is true with silica brick. Quartzite, from which silica brick are manufactured, is a hard stone which breaks into angular fragments on grinding and lacks the working plasticity common to clays. For this reason it is impossible to work it in any of the various types of brick machines, and silica brick produced by the dry press method has been declared unsuitable for many uses to which this refractory is put. Attempts to mold silica brick mechanically have resolved themselves into the development of machines which simulate hand molding.

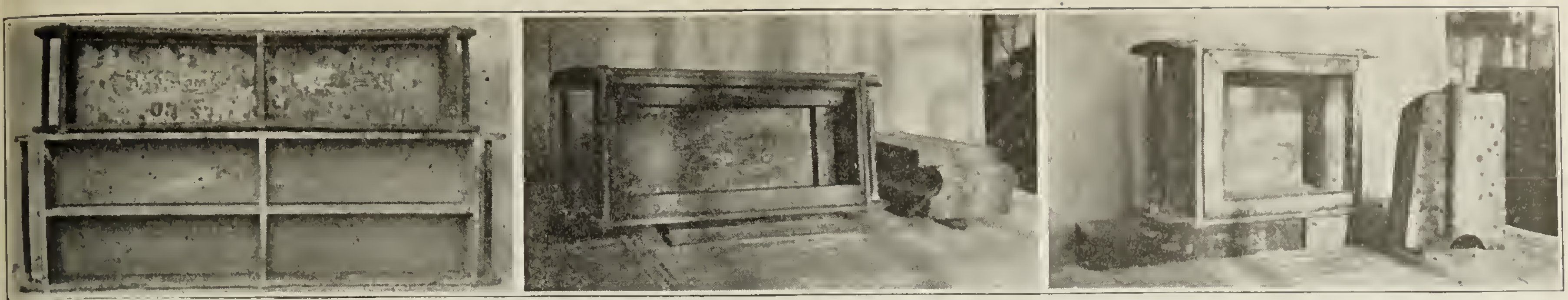
Slop mud molding is the common method of producing standard nine inch and sizes. This work is hard and men who will stick to it are becoming fewer each year. As a result many manufacturers find it necessary to put on "Hammer Turns" to keep up capacity. Practically the same type of mold is employed in this case but stiffer mud is used and the filling of the mold is accomplished by hammering.

The slop mud molder works at a table above which is a mud storage tank. Provision is made for one man at each of the four corners of the table. The open slip mold made in a gang of from four to six openings is used. The mold is constructed of mild steel and provided with hand holds for convenience in dumping the brick. The bottom plate is hinged to the table to facilitate turning the filled mold onto the pallet. Pins fitted in the four corners of the plate hold the mold in place while it is being filled. The only tools the molder uses are his hands, which are encased in heavy rubber gloves, and a steel "slicker." Each mold opening is filled separately. The molder rolls a "walk," lifts it a few inches above the mold, into which he throws it forcibly following it with the heel of his hand to insure the proper filling of the corners. After filling all the mold openings the excess material is cut off and the upper surface of the brick "slicked." The off-bearer then places a pallet on the mold, turning pallet and mold over by means of the hinged bottom plate. The plate is thrown back and an empty mold placed in position for filling. Molds and plate must be sanded with pure silica sand to prevent the mud sticking to them. The filled mold resting on the pallet is transferred to the dumping table. A "push board" applied to the bottom of the inverted mold exerts pressure against the brick while the mold is being stripped off, thus preventing deformation of the brick. The pallet of brick is then placed on the rack car. The usual number of brick produced in a day by each molder and off-bearer is 3,024 nine inch straights. This constitutes a "task" and is used as a basis for the figuring of all molding piece rates in effect on the plant.

Slop Molding Tedious Work

There is a knack to slop mud molding which is difficult to acquire and the work is so tedious that only about one in 20 starters ever get to the point where they can make a "finish." The man's hands sweat in his heavy rubber gloves and get sore, his arms and shoulders ache and he "blows the job" for something easy. Altho molders make high wages at all

A Type of Mud Storage in Use at Modern Silica Brick Plant



Three Types of Molds. 1—Vent Bottom Slip Mold for Ordinary Brick. 2—All Steel Slip Liner Mold for Special Shapes. 3—Another Type of All Steel Slip Liner Mold for Special Shapes

times, the differential does not hold the men thru the apprentice period.

The mold used for hammering standard brick is fastened to the bottom plate while the mold is being filled, and released when the mold is turned onto the pallet. Sometimes the molder has an off-bearer, in which case the task is just the same as for slop mud molding. Some hammer molders offbear their own brick and 1,296 brick constitute a day's work. The cost of molding is slightly higher with this method.

Hammered Brick

There is a tradition among furnace men that hammered nine inch straights are not satisfactory as slop mud brick. This may or may not be true, but manufacturing conditions are forcing the method on the refractories producer. There are many furnace conditions where nine inch brick only are used, but there are just as many where they are used in conjunction with ordinary shapes, which are always a hammered product. It does not seem probable that even in these conditions any marked difference in service of slop mud and hammered brick can be noted.

Inspection of standard brick is a particular matter. From the standpoint of the molder the inspection foreman merely strikes out brick to lengthen the molder's day. All sorts of excuses are offered for poor workmanship and many times they are legitimate. Soft mud may be delivered from the pans and the brick do not stand up. Bellied brick give trouble in setting and are not satisfactory for furnace work, so they should be thrown out, altho it is not the molder's fault when the mud is soft. The most common faults in brick for which the molder is alone responsible, are spongy corners and poor slicking. An inexperienced or careless off-bearer can ruin more brick than a good molder can make in a day. The usual defects which may be laid to the off-bearer includes pinched corners caused by unequal pressure on the push board when stripping the mold. Careless handling of the pallet may cause the brick to squat, and jamming the pallet hard back against the one already in the car causes the brick to shift slightly on its base, elongating it somewhat.

Proper "Mud" Important

The inspector is forced to make some allowances for conditions not the fault of the molder or off-bearer, but with proper co-operation from all foremen these allowances need only be made in actual emergency. The pan foreman holds the key to most of the troubles, altho his work is made difficult by the absence of standard grinding methods. Then again, every molder has a different idea of what constitutes good mud, and one rarely ever hears of a molder who received a batch of mud that was "just right."

One of the causes of green brick loss is found in weak pallets, which bend under the weight of the brick, resulting in warpage. The underside of iron or galvanized pallets is attacked by rust, and a coating of lime forms on the top which eats into the metal. On scaling off this coating gradually reduces the weight of the metal until it is so weak the pallet must be discarded. Pallets should be cleaned regularly to keep the surface as true as possible. Any unevenness shows up in the surface of the brick and may give the customer cause for complaint.

Enameled Pallet Proves Good

Recently a pressed steel pallet to which a coating of enamel has been applied came into use and is proving very satisfactory. The enamel resists the action of the lime and eliminates the rust scale. A lime scale hardens on the surface but, aside from killing the luster of the enamel, does not appear to damage it and the pallet may be cleaned and its surface kept true with comparative ease. One of the difficulties experienced by the manufacturers of the enameled pallet was the production of a perfectly true pallet free from warpage. The tendency of the pressed steel blank is to warp in the enameling furnace and once it is warped the pallet is difficult to straighten. However, a good percentage of straight pallets are produced and the cost is not high in comparison to the greater service one can expect from them.

Good workmanship is only possible when the rack car pallets are straight, free from warpage and have a clean, true surface.

Oiling Prevents Scale

The use of cheap cylinder oil to which is added a small percentage of finely pulverized graphite scrap has proved successful in preventing the formation of lime scale on pallets. If this mixture is brushed onto pallets which already have a coating of scale the coating will gradually soften and can be easily removed, and no more will form until the oil and graphite wears out. An oil coated pallet will make at least 15 trips thru the dryer before scale starts forming again. The cost of applying this coating is about two cents per pallet. The freshly coated pallets are hard to handle but no extra breakage appears to have resulted from placing brick on them, altho it is desirable to put the coated pallets thru the dryer once before placing in service. After one or two trips thru the dryer the coating becomes dry enough so that it is not disagreeable to handle. This method of preventing lime scale is applicable equally well to iron, galvanized or enameled pallets.

Pallets Sometimes Cause Iron Spots

Enameled pallets do not rust and for this reason are much preferred to an iron or galvanized pallet. Rust scale drops onto the floor and gets mixed with the manufacturing scrap at the tables. This scrap is always taken to the waste dump. Altho most plants make a special effort to clean pallets at stated points only, some pallet scale will get into the scrap which goes back to the pans. When this occurs brick come thru with iron spots. With a large percentage of iron spotted brick encountered in the operation of any plant the source of the iron may be traced to pallet scale.

Silica brick and shapes are divided into four general classes, viz.: Standard, Ordinary, Difficult and Coke Oven. Standard brick have a nine inch equivalent of one. The Ordinary class of brick consists of open hearth and simple shapes, mostly rectangular, which have an equivalent of more than one. Difficult shapes are what the name implies and assume all sorts of forms and sizes. Some Coke Oven brick are often simple and might be classed as Standard or Ordinary, as far as size and shape are concerned, while others are very difficult, being both irregular in size and shape. However, all brick made for a Coke Oven job are usually classed as Coke Oven.

Vent Bottom Molds

The molding of Ordinary brick is usually done in molds of the vent bottom type or in the slip liner type when more particular workmanship is required. The vent bottom mold is a slip mold having a vent provided between the bottom plate and sides to permit air to enter the mold as the brick leaves it. On account of the working principle of the mold a depth of four inches appears to be the practical upper limit and then only if the width is about the same or does not exceed six inches. The common open hearth shapes, being from two to three inches in thickness, are easily made in this mold. The construction of the vent bottom mold requires mild steel for the box, while the bottom is made of hard wood lined with galvanized iron, or in more recent construction a steel bottom is used.

Good workmanship can be obtained with this mold in the hands of a competent man, altho the surface of the brick issuing from the mold last will always be slightly smaller than the opposite face. This effect is exaggerated somewhat by the tendency of the opposite face to spread out as it rests on the pallet. The condition is more marked if the mud is wet.

Good Workmanship

To obtain the best workmanship on Ordinary shapes the slip liner mold is used. This type consists of a steel box inside of which a set of removable steel liners are fitted. The bottom of the box forms the bottom of the mold and the liners the sides. When the mold has been filled and slicked it is turned onto a pallet. The box is then removed and the liners carefully stripped from the brick. By using this method perfect brick may be formed which are true to shape and dimension in every respect. The tendency of the brick to settle of its own weight and of the face resting on the pallet to spread slightly is taken care of in the design of the mold.

The vent bottom mold is always used in connection with dryer rack cars. Brick made in the slip liner mold may either be dried in the dryer or on the hot floor, depending on the class of brick being made. This mold is adaptable to almost any size and shape and is more widely used for Difficult and Coke Oven than Ordinary.

Hand Molding the Brick

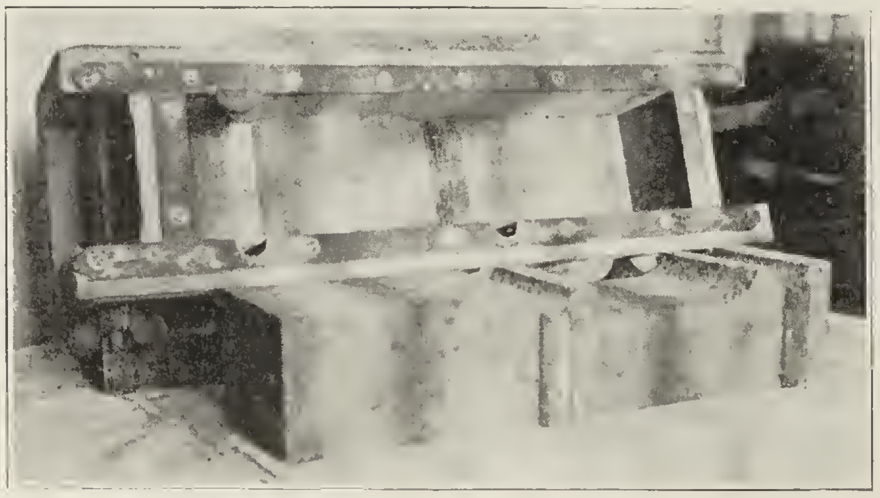
Two shape molders work at each table, the mud being dumped in the center within easy reach of both men. The tools used are a short handled scoop for filling the mold, a "smacker," or flat hammer, for molding the brick and a "slicker" to finish the top surface. A small straight-edge is commonly used to test the various surfaces of the brick after the mold has been stripped off and any tendency of the brick to belly is corrected at once. The flat hammer has lately been made entirely of steel, a piece of pipe being used for a handle. The old construction was of hardwood, one face being covered with eighth inch flat steel and a wooden handle fitted to the other. The all steel hammer is much more durable than the wooden "smacker" and will last indefinitely without frequent repair. The "slicker" is made of three-eighths by five inch tool steel and varies from 15 to 18 inches in length. The tool is fitted with two handles at convenient intervals having a suitable angle with the working face. The "slicker" used by the nine inch molder has a straight cutting edge and is rigid. It serves as a sort of scoop in trimming the excess mud from the top of the mold and with a few flat strokes the brick is finished. The shape molder picks out a worn slicker for his work and many prefer one that has some spring in it. Molders acquire peculiar working habits and one man may use successfully badly worn tools with which another man could not work at all. Considerable skill is required to slick a wide brick, especially with worn tools, as the tendency is to leave a belly in the middle of the slicked surface. This will cause a slight distortion of the shape when it is turned onto the pallet and is undesirable.

How Shapes Are Made

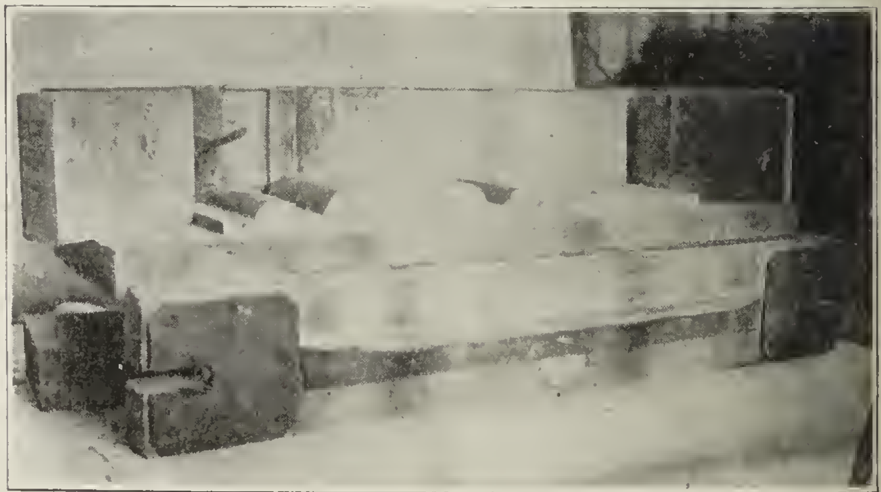
The brick is made by scooping the mold full of mud and jamming it down into the corners and edges with the scoop handle. The mud is then heaped high in the mold and hammered until the brick is completely filled. The excess is cut off and the surface slicked carefully, in such a manner as to leave no belly and no cracks or spongy places in the face of the brick. Some molders have a habit of using water in slicking, but this is not necessary or desirable, and better results can be obtained without it unless the mud is dry. A special dumping table is used with shapes, the pallet being placed on a rack hinged to the table. This rack swings to a nearly vertical position to receive the brick and returns to a horizontal position as the mold is turned over. The pallet holding the mold and brick is shoved far enough onto the table to prevent tipping back and the mold stripped from the brick. In the case of the all steel mold the box is lifted straight off and returned to the molding table. The liners are then carefully pulled away from the sides and placed in the box in their proper positions. Care must be taken to see that the box is clean and that the liners fit exactly. The liners and mold bottom are sanded lightly with pure silica sand to prevent the brick sticking to them. The mold is then ready to be refilled and the brick is placed either on a rack car or on the hot floor to dry.

The Slip Liner Mold

The slip liner mold was formerly used only in the case of plain rectangular shapes, but has lately been adapted to all sizes and forms of brick. There are very few brick manufactured which cannot be made in the steel slip liner mold, and for such shapes a wooden knock-down or screw mold



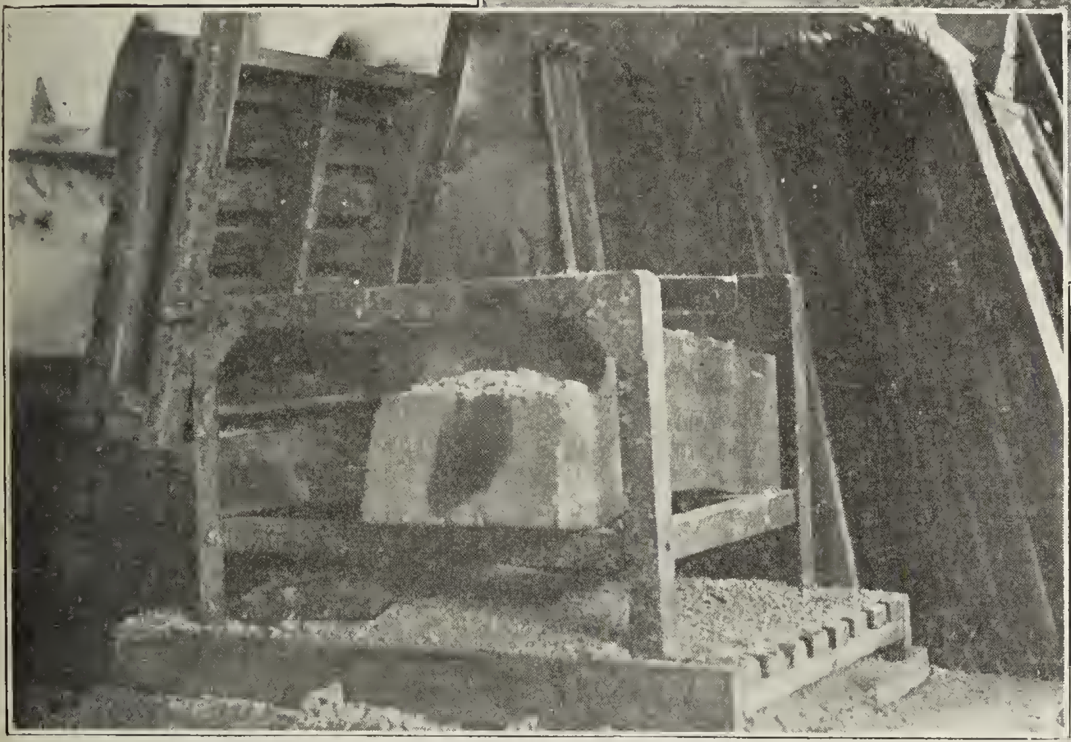
A Wooden Mold of the Knock Down Type for Special Shapes



The Same Mold as on the Left "Knocked Down"

At the Right Is Shown a Molding Table for Special Shapes Showing Batch of Mud, Filled Mold and Short Scoop

Bottom Picture Shows a Dumping Table for Special Shapes with Pallet in Place



is used. The wooden mold was formerly employed in the manufacture of all difficult shapes but, on account of its more expensive construction and upkeep, has given way to the all steel slip liner mold. Some plants still use the wooden construction, but are doing so because they have not taken the time to study their mold making problem. Wooden molds warp and split in storage and in use they are easily damaged. The steel mold has none of these faults. The construction cost of wooden molds is higher than for steel molds, especially in shops where special tools and machinery have been installed. A combination punch and shear is a time and money saver in building steel molds, and any manufacturer who has to turn out a large quantity of steel molds regularly will do well to investigate the possibilities of this piece of equipment. It is safe to say that a given mold may be constructed of steel in two-thirds the time required to build it of wood, and a more satisfactory and lasting job is assured.

Steel Mold Easily Assembled

The wooden mold is made of hard maple and is lined with galvanized iron to resist wear. The bottom is furnished with a shoulder of the same shape as the inside of the mold box, and is secured in place by clamping the sides down hard against the shoulder. This type of mold is difficult to assemble and if a molder is inclined to be careless his brick will not be perfect. The all steel mold is easily assembled and slots and pins are often provided to make the exchange of liners possible. Other things being equal, the workmanship of brick made on all steel molds is very much better than can be expected from wooden molds.

In stripping the wooden mold from the brick, it is inverted on the pallet, using the special dumping table previously described. The screw clamps are loosened and the bottom pulled straight off from the brick. The sides and ends are removed carefully one at a time and, after cleaning and sanding, are placed in their respective positions on the bottom. The screw clamps are tightened and the mold is ready to fill. The time required to strip and reassemble this mold is somewhat longer than necessary to strip and prepare the steel mold for filling.

A large assortment of special shapes are manufactured which require a special pallet for dumping and drying. All such ware is usually dried on the hot floor, altho an occasional plant is operating without a hot floor and everything is dried on rack cars in dryer tunnels.

Building the Pallets

The special pallets are made to conform to the slicked surface of the brick, which may be either concave or convex, or which may have projections which need supporting or tongues requiring clearance. The pallets are constructed of any kind of kiln dried lumber which does not warp easily. Three-quarter or seven-eighths stock is used, slats of the same width being cut and nailed to the sills which take the form required in the pallet. The slats are spaced from one-quarter to three-quarters of an inch, depending on the weight of the brick being made. When the slats have been applied they are covered with 28 gage tin, which furnishes a true bearing surface for the brick. Wooden pallets should be carefully and accurately constructed, cross bracing and double frames being used on some large sizes to increase the strength. Special pallets are an expensive item in mold cost, and are often only used for one run on a certain shape.

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NASHVILLE DEMAND CONTINUES STRONG

The demand for both common and face brick is very strong in Nashville, Tenn. No changes in prices have been made recently, nor are any contemplated. Orders continue to come in in large sizes, and quantity shipments reached a new high mark for the year in the month of September, according to reports.

The output of Nashville manufacturers is able to care for the present demands only because considerable increase in production has been made within the last few months.

The outlook for fall and winter is very good and prices are stable. No serious harm has resulted from car shortage to date. However, out of town buyers are urged to lay in a supply to meet their anticipated need for a few months as there are large numbers of new big jobs coming in which will require many million brick.

FINE CERAMIC MANUFACTURE

A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

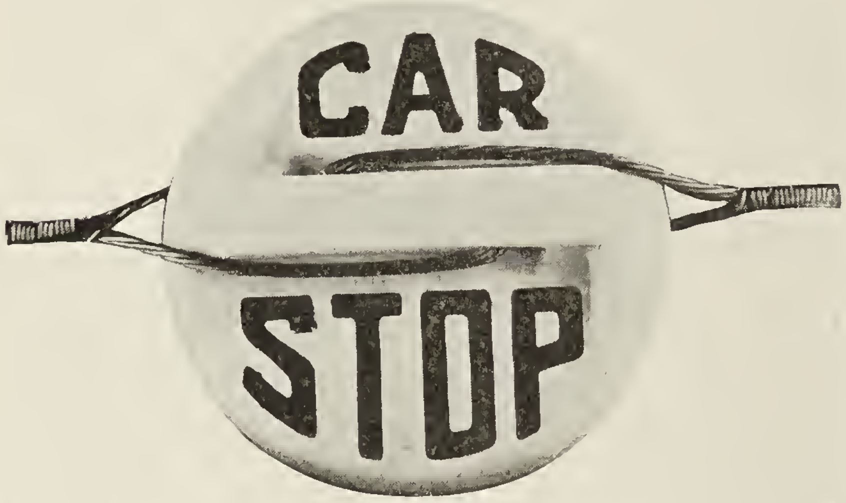
NEWELL HAS A CERAMIC SCHOOL

On November 1, Newell, W. Va., which is a part of the East Liverpool pottery district, will have a ceramic night school, if the plans which were completed recently are carried out. This ceramic night school will be under the auspices of the United States Government. The school, which will be open without charge to employes of potteries of the clay plants in Newell, will be in charge of A. V. Bleininger and J. W. Hipplewaite, of Newell, and R. V. Miller, of East Liverpool, chemists.

* * *

A CAR STOP SIGN MADE OF PORCELAIN

A car stop sign combined with a line and strain insulator which is constructed from the same material that high voltage insulators are made is a recent development of the American Porcelain Co., East Liverpool, Ohio. These signs have the advantage of showing up clearly and distinctly at all times as smoke and dirt will not readily adhere to their highly glazed surface.

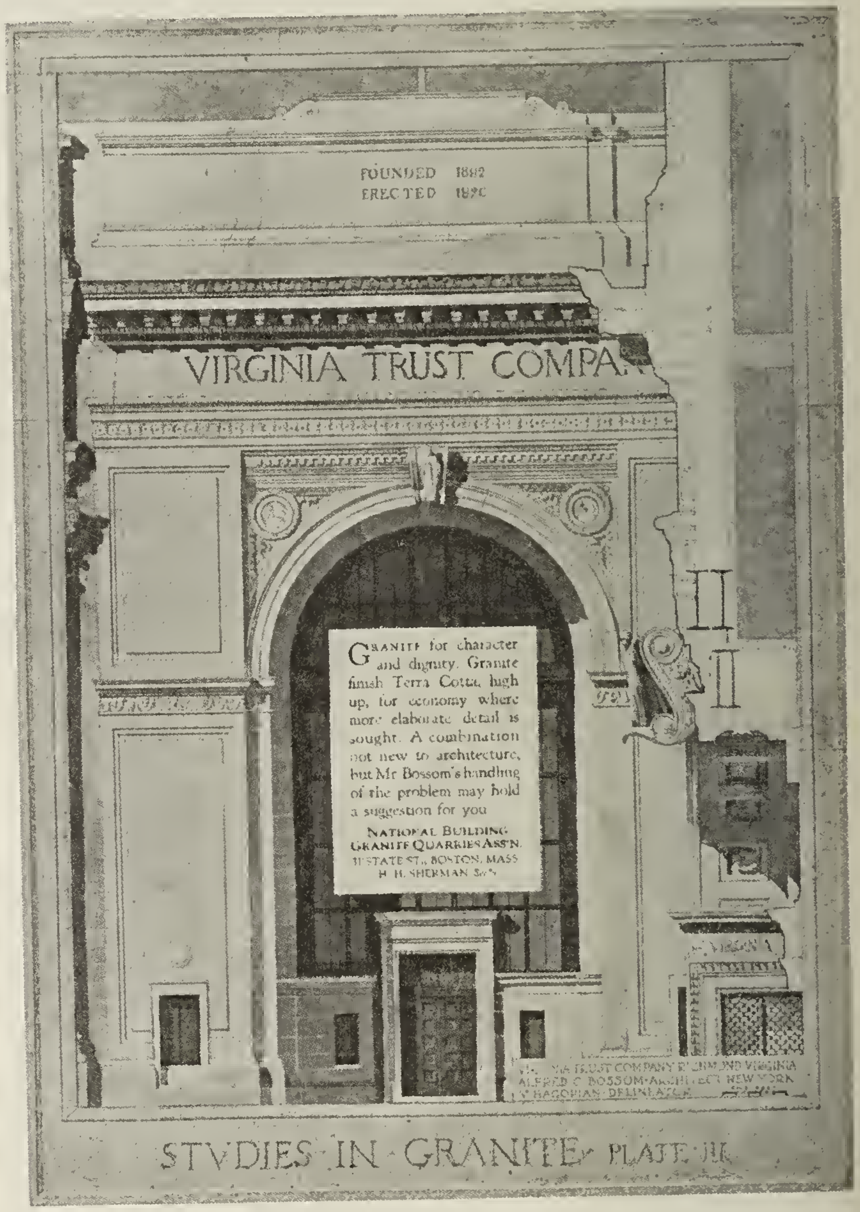


A Porcelain Car Stop Sign Combined With a Line and Strain Insulator

* * *

GRANITE MEN RECOMMEND TERRA COTTA

The picture printed herewith is a reproduction of a full page advertisement in the journal called "Pencil Points," a periodical which is read by architects. It is an advertisement of the National Building Granite Quarries Association and the unusual feature of it is the fact that it recommends the use of terra cotta in imitation of granite in the parts of buildings that are high up from the ground. Advertising of this nature requires, above all, a broadminded view point on the part of the advertiser and a thoro understanding of the exact uses for which his product is best. A highly decorative frieze or cornice in granite would be very expensive and could be executed much more cheaply in terra cotta. It takes vision and courage, however, to say this in an open advertisement to the users of granite and terra cotta.


FOUNDED 1892
ERECTED 189C
VIRGINIA TRUST COMPA
STVDIES IN GRANITE PLATE III

GRANITE for character and dignity. Granite finish Terra Cotta high up, for economy where more elaborate detail is sought. A combination not new to architecture, but Mr Bossom's handling of the problem may hold a suggestion for you

NATIONAL BUILDING
GRANITE QUARRIES ASS'N.
31 STATE ST., BOSTON, MASS
H. H. SHERMAN Sec'y

A Page Advertisement from Pencil Points in Which an Association of Granite Men Recommend the Use of Terra Cotta.

* * *

FORM FRANKLIN POTTERY

Franklin Pottery has been incorporated with a capital of $51,200. F. R. Hansell, J. Vernon Pimm, E. M. McFarland of Philadelphia are named as incorporators. The corporation Guarantee & Trust Co., Wilmington, Del., is correspondent.

* * *

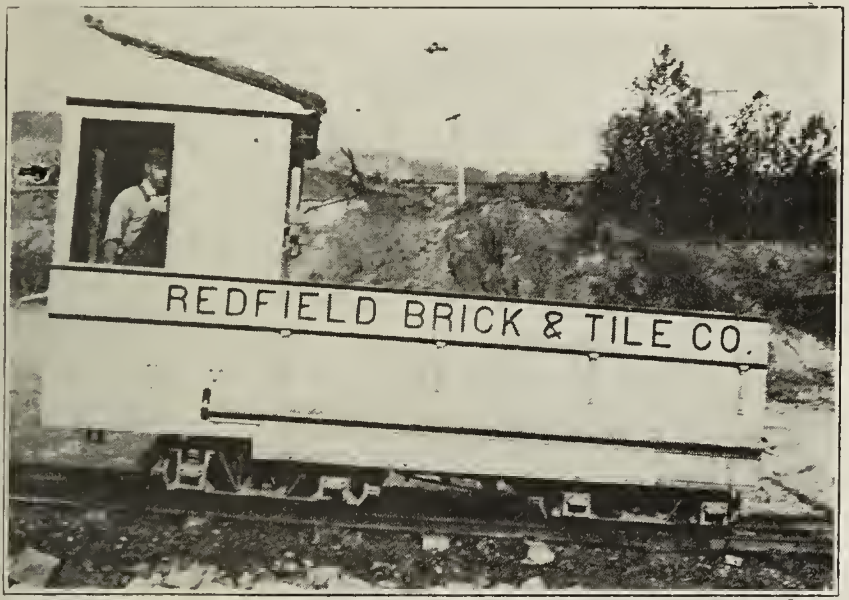
FORM POTTERY IN MOOSE LAKE, MINN.

The Menadji Tile & Pottery Co. of Moose Lake, Minn., which has a capital stock of $50,000 has filed articles of incorporation at St. Paul, Minn. The incorporators are Frank Johnson, C. J. Dodge, Hulda E. Dodge, L. H. Blacklock, all of Moose Lake, and John B. Sermer of B m, Minn.

Management and Superintendence

SOME PLANT BETTERMENTS AT REDFIELD, IA.

In December of last year Senator W. J. Goodwin decided to see what could be done to cut the cost of operation at the plant of the Redfield (Ia.) Brick & Tile Co. and with that end in view he called the writer to his office. After making a general survey of the plant it was decided that the best place to start was with the clay handling. There was an Eagle shale planer in use, but the hauling and storage was very poorly taken care of. A peculiar feature with which we had to contend was that the shale pit was too near the plant, which made it necessary to follow engineering similar to that performed on mountain railroads in order to get a grade that a power car would climb safely and readily.



This Electric Clay Car Was Especially Constructed for Use on the Redfield (Ia.) Brick and Tile Co.'s Plant to Haul Clay from the Pit Up a Five Per Cent. Grade to the Plant

A belt conveyor was installed from the planer to a seven yard storage bin mounted on four double flange wheels, permitting the bin to move with the planer car. The loading of the clay car is thus made automatic. The car installed was a Thorpe side dump, the dumping and closing of the doors being controlled from the operator's cab. This car is made entirely of steel, with a 4½ yard capacity and weighs 7,500 pounds. It is mounted on two swivel trucks, which makes it possible to negotiate a curve of a 25 foot radius.

The power transmission on the Redfield car is of a new type, designed especially for heavy grades. This proved to be quite successful. The power is furnished by a 30 horse power motor, the current being carried to it thru two overhead trolleys and three phase rails. The power is transmitted to all eight wheels and the alignment is always right, no matter where the truck stands relative to the car body. The maximum speed is six miles per hour and it does not appear that there is any need for sand on a five per cent. grade under any weather conditions. The car comes into the company's new clay storage 20 feet above the floor and can either be dumped into the storage or directly into a crusher hopper which has an available capacity of 30 tons. That is, the feeders will feed 30 tons of clay from the hopper after the hauling is stopped, the bin having been left full. The feeders are of the steel belt type and were especially designed for this job. They can be set for any desired amount of clay and will continue to feed that amount until changed. This adjustment can be done instantly by means of the movement of a lever.

The clay storage, which is 50 x 90 feet, is equipped with a cable-button conveyor and steel elevator which delivers the clay into the crusher hopper, where it is available to the feeders. This installation is being successfully operated by three men who put the material onto the cutoff table, and in good weather they divert a part of the shale into storage and, when in bad weather the clay from the storage is used, these same men take it out. The men doing this work are one planer operator, one car operator (who, having plenty of spare time between loads, does the necessary cleaning up around the planer) and the pugger, who, owing to the practically automatic action of the pan feeders, has complete control of the grinding and pugging.

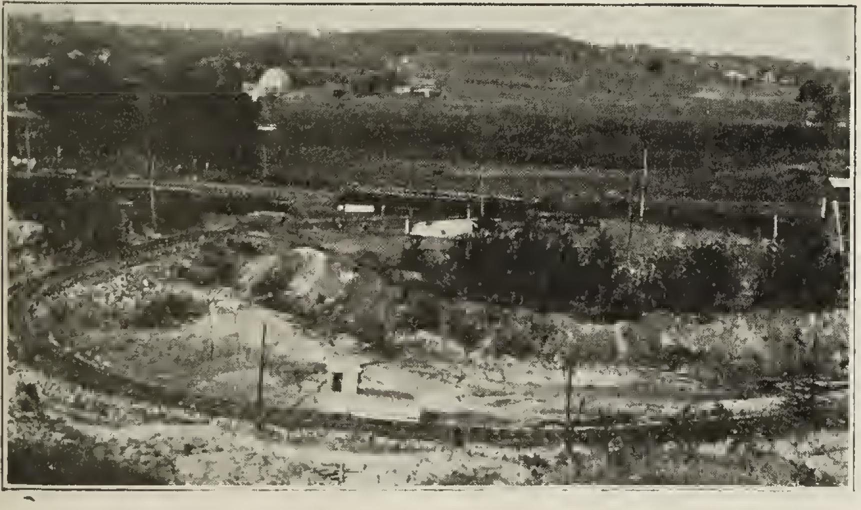
The plant is now operating at an average capacity of 125 tons of hollow ware per day and their hauling system has a capacity of 4½ yards, or a little over seven tons, every five minutes, which would mean 840 tons per ten hour day. —Clyde A. Thorpe, mechanical and ceramic engineer.

⁂

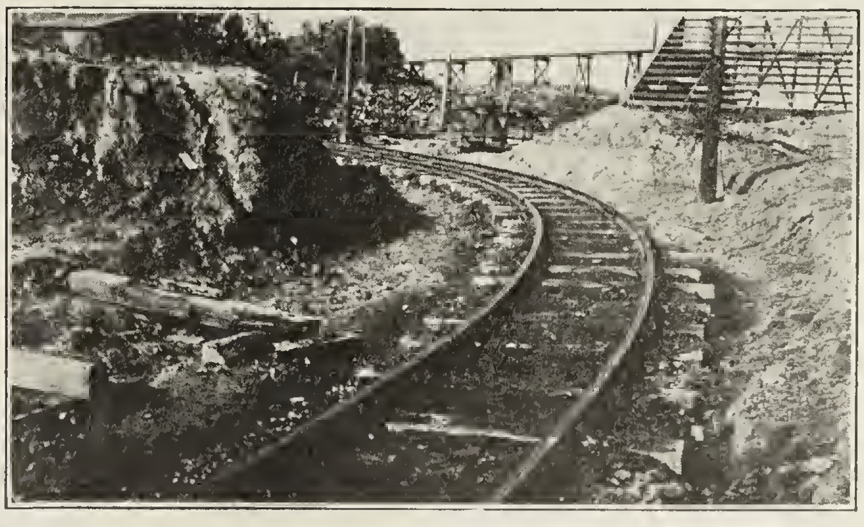
EMERGENCY STOPPING DEVICES

Wherever there is power driven machinery, arrangements should be provided at a convenient point or points, in each department or workroom, whereby either the entire power supply in that department or room may be cut off as a whole or the one or more lines of shafting used in driving counter shafting or directly driving machines, may be cut off independently.

Friction clutches, tight and loose pulleys, motor stops, and



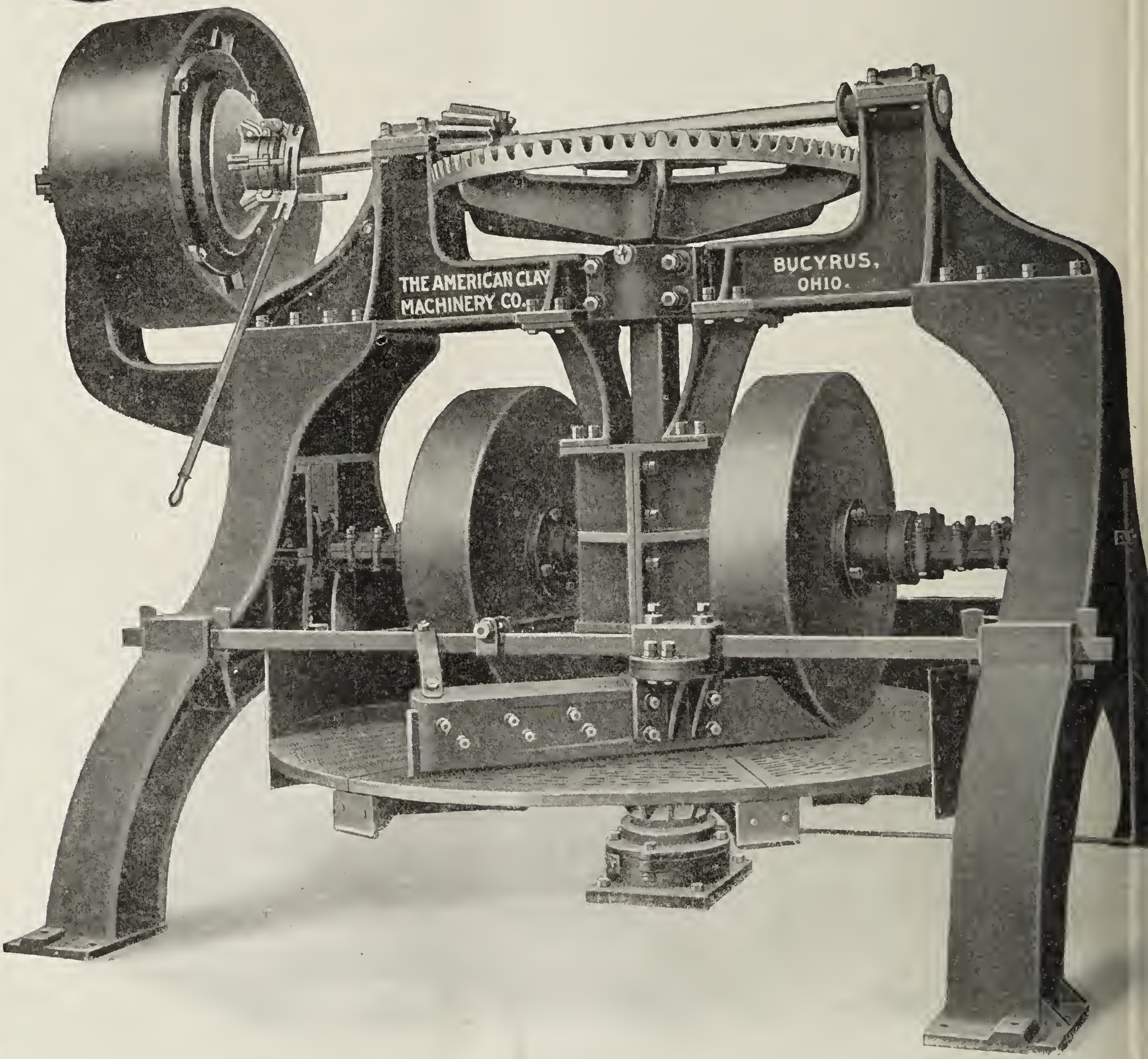
A General View of the Track Installation at Redfield, Ia. The Track Makes a Complete Circle Before Going into the Plant



This Shows the Beginning and End of the Clay Pit Track. The Track Leading Out of the Bottom of the Picture Runs in a 100 Foot Circle to the Trestle In the Background

Built Right
Run Right

PRODUCER



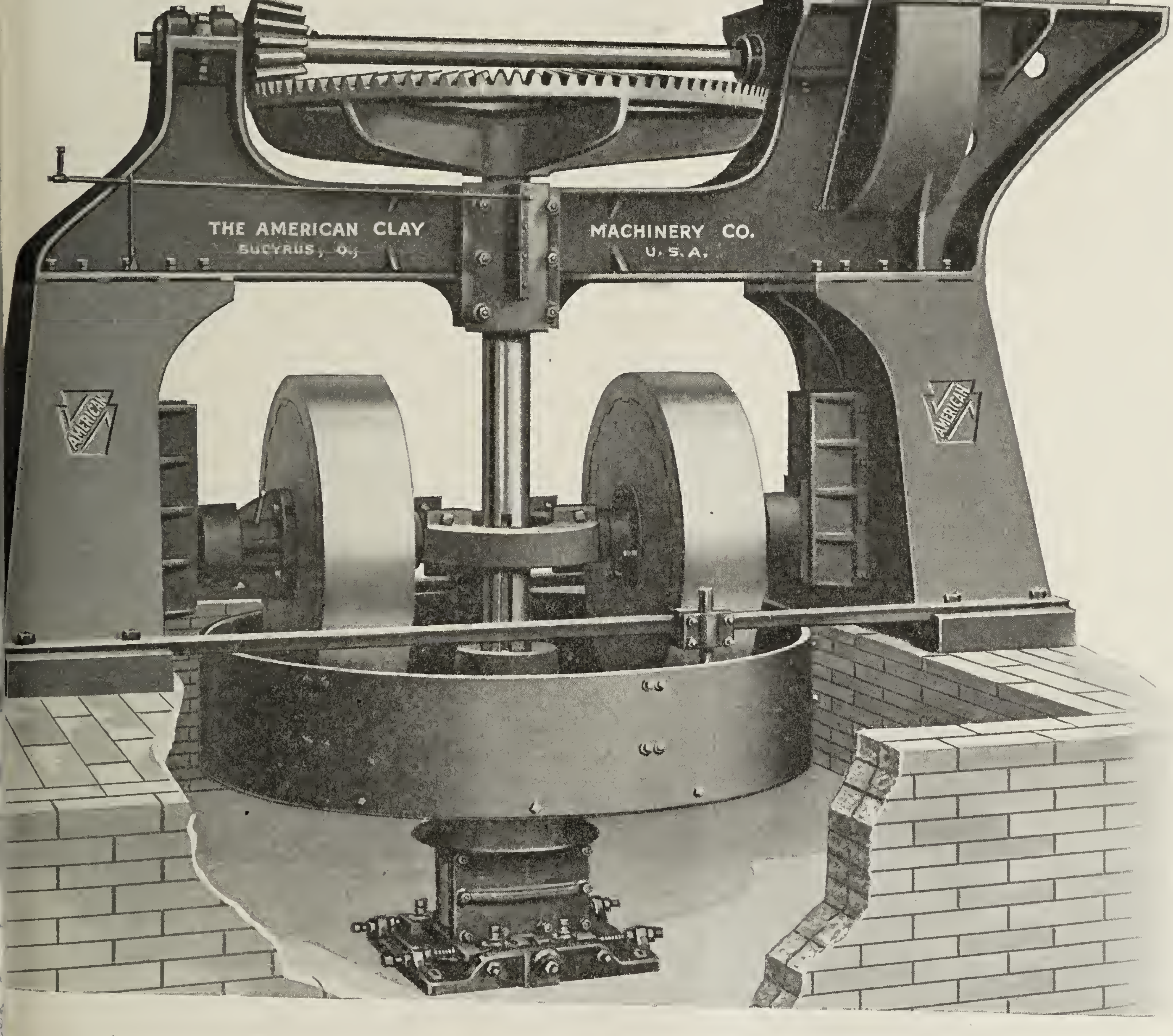
American Standard Nine Foot Dry Pan, Weight 31,000 Pounds

The Hadfield-Penfield Steel Co., Bucyrus, Oh

AND SAVERS

ese "Built Right Run Right" Units of The "American" Line are both lucers" and "Savers". In production they "Surpass" and in "Saving" "Eclipse" because of the years of experience back of their Design- id Building. Your success depends upon the greatest possible Pro- on and Saving. In both Saving and Producing the "American Line" ooperate. We Build Every Clay Plant Need.

The Hadfield-Penfield Steel Co.,
Bucyrus, Ohio, Builders of "The American Line"


THE AMERICAN CLAY
BUCYRUS, O.
MACHINERY CO.
U.S.A.
AMERICAN
AMERICAN

American Heavy Duty No. 335 Wet Pan, Weight 70,500 Pounds

in some instances engine stops are used to accomplish this.

A safety placard should be prominently displayed, calling attention to the stopping device and stating rules for stopping and starting machinery.

Auger Machines and Dies

Weathering and fine grinding produces easier flow, reduces the die wear and the power consumption.

On the other hand, lamination as shown by faster center flow will not be stopped by finer grinding or by increasing the plasticity. This trouble is found in those clays which have high external adhesion to the metal die and require considerable force to cause them to slide and not to stick, and whose internal cohesion has been lowered by the large quantities of water necessary to bring them to a good plastic condition. The differential flow in this case can usually be reduced by rendering them less plastic. Sand, grog, or other non-plastic materials in the proper amounts and properly sized, will decrease the plasticity, increase the internal friction and reduce the external adhesion. The coarser grinding of laminating shales will decrease the trouble within limits. Better working bodies can usually be obtained by mixing in sandy clays than by sand alone with the too-plastic clay. Shales usually do not laminate as much as the soft clays, and for that reason are more suited for paving block, which must have the minimum lamination. Soft clays disintegrate in the pugging process to their finest state of subdivision. Shales because of their hard structure resist the penetration of water. Hence the state of subdivision can be controlled by the grinding and a coarse or fine body be produced at will.

Chemical Methods for Changing Plasticity

In general (as it will not be effective enough for bad cases), the addition of a fraction of a per cent. of the acid will tend to increase the plastic strength and alkalies will decrease the plasticity of the sticky fat clays. The amount of water required for plasticity is lowered by the addition of an alkali. An excess of the salt is no good and will cause scumming. H. F. Staley, (Trans. Amer. Cer. Soc. Vol. 17, p. 708,1915) after working with weakly plastic Iowa loess states, "Common salt (Sodium chloride) decreases the rate of drying at all times, in most cases increases shrinkage, produces better colored ware, and has a beneficial effect on vitrification behaviors especially in sandy or loess-like clays. The use of additions of common salt in amounts of from one-fourth per cent. to possibly two per cent. of the weight of the clay is a feasible method of rendering workable many of the clays of Iowa that give trouble in drying and burning." A. V. Bleininger, states, (Eighth Intern. Cong. Appl. Chem. Vol. 5, p. 24) "By the use of sodium chloride in the case of exceedingly plastic clays of tertiary origin, the plasticity was greatly reduced. This was strikingly demonstrated by their drying behavior. Briquets made from the untreated clay cracked and checked very badly, while specimens made up with a salt solution dried normally without evidence of cracking and at the same time possessed a greatly reduced drying shrinkage."

Preheating to Reduce Plasticity

Bleininger, (Tech. Paper No. 1, p. 52 U. S. Bureau of Standards) states, "The plasticity of clays is decreased by heating at temperatures above 100 deg. C. This change becomes more marked with higher temperatures and is accompanied by reduction of the drying shrinkage upon reworking. According to the nature of the clay, the change proceeds abruptly after reaching a certain temperature or is more or less gradual thruout. A decided alternation seems to occur in most clays between 200 deg. and 300 deg. C. as is shown by the granular appearance of the clay and the decrease in the drying shrinkage. The color also becomes darker and in ferruginous materials assumes a reddish hue. The purer clays seem to be affected more gradually by this heat treatment. The rate of drying of the preheated clays does not seem to differ from the rate for the undried clays. Excessively plastic clays which dry with difficulty and result in loss due to checking and cracking, behave normally in drying after being preheated. The best temperature for this treatment must be determined for each clay, and invariably the lowest possible temperature giving the desired results should be adopted.

Dryer Efflorescence

Some preheated clays seem to release their soluble salts more easily than the normal materials. Such clays are likely to show dryer efflorescence. Clays thus treated should be tempered with as little water as possible and require good lubrication. The cause of the improved drying quality of the preheated clays is to be sought in the increased porosity. It appears that coagulation of the flocculent portion and the fine nongranular particles of clay takes place, analogous to the set of certain gels. "Bleininger and Layman, (Trans. Amer. Cer. Soc. Vol. 11, 354, 1909); Edward Orton Jr., (Trans. Amer. Cer. Soc. Vol. 13, p. 785, 1911); and Joseph Keele, (Trans. Amer. Cer. Soc. Vol. 14, p. 152, 1912.) found that preheating was beneficial in reducing the excessive plasticity of the sticky unworkable clays from Illinois, Wyoming, Montana, Dakotas, Saskatchewan, Alberta and near Edmonton, Canada.

Distribution of Metal Back of Die

Bridges, cores, nuts, bridgeposts, studs, and so forth, all retard the flow of clay and must be distributed evenly or balanced to avoid unequal flow. The amount of such material should be reduced to a minimum, and baffling should be avoided whenever possible. Baffles may only be necessary temporarily as the metal back of the die must get a polish before you can tell how it will act.

If the center webs of a hollow ware die are fast one method consists in adding a shim to the core so that the thickness of the web is reduced. This will retard the center flow to that of the slow sides. A second method for increased speed consists of increasing the thickness of the slow members. This increases the speed but adds weight to the tile. It is better to open up rather than to retard a given area. A baffle on a bridge may be necessary to take off some of the pressure on a thin core which is shifted by varying pressure.

Editor's Note.—This is the fourth part of a paper prepared by the Pacific Northwest Clayworkers' Association. In compiling it much information was obtained from the references quoted in Brick and Clay Record of September 4, 1923.

SILLIMANITE FOR SUPER-REFRACTORIES

Experimental work in the development of refractories from artificial sillimanite designed to be superior to the natural refractories now in use is in progress at the Northwest Experiment Station of the Bureau of Mines, Department of the Interior, at Seattle, Wash. The work is being done in cooperation with ceramic trade interests. Sillimanite is the normal silicate of alumina, containing 63 per cent. Al_2O_3 and SiO_2, and is also made artificially in the electric furnace. The best compound found is one a little richer in alumina than the pure sillimanite. One of the principal problems is the presence of impurities in the local clays that affect the fusing point. It was found that iron oxide present as impurity could be partly removed by reduction, but magnesia and lime could not be removed.

The Letter Box

A Place Wherein Letters That Have General Interest Are Published and Commented Upon

ANOTHER VIEW ON "ENGINEERS' COMMISSIONS"

G. W. Greenwood, formerly secretary of the United Refractories Co. at Dunbar, Pa., has written to Brick and Clay Record anent the discussion of the subject of secret commissions on the part of engineers. Mr. Greenwood condemns this practice and unconditionally says, "There is but one word which applies to the engineer who receives a secret commission for specifying material, for the public official who demands a rake-off from contracts let, for the publisher who would expect pay for editorials and reading matter—GRAFTER."

The following article, written by Mr. Greenwood and published in Brick and Clay Record a few years ago, expresses his sentiment on the matter:

With an oily smile, the representative of a firm of contractors walked into the office of the sales manager and extended a flabby hand, which the sales manager held for an instant and then released. He had once said that shaking hands with that man was like feeling shape mud to see if it was properly tempered.

"What are you selling silica at just now?" inquired Blank, "and what can you do in the way of July deliveries?"

"30 base, nine-inch series, and our usual extras for larger sizes. We are not yet sold up for July," replied the sales manager.

"Then just enter our order for this list of shapes for the cap of the glass tank of the Alight Glass Co. at a base price of 35, and credit our account with the additional five dollars a thousand."

"Can't do it. We are entering all orders for July shipment at 30 base, and we cannot invoice one at 35 base while at the same time invoicing others at 30—that is, unless we show on the face that we get only 30 out of it. How would that suit you?"

"It wouldn't do by a long shot," retorted Blank. "What difference does it make to you so long as you get your price what the Alight people pay for the brick? They have contracted with us to build their tank and to place orders for the material, and we have to guarantee the work. If we use your brick, we have to stand the consequences of any failure of the brick to stand up. You can't expect us to give this guarantee for nothing. We have to get something out of it."

"Then if you are justly entitled to this charge, why do you object to their knowing about it?"

"Do you think they would be fools enough to pay us for the work and give us a commission on the material besides? You people are not hurt in any way. They pay the bills."

"Let me tell you right now, Blank, we will not collect from your employers and turn over to you anything which they would feel you were not entitled to, at any rate without their knowledge."

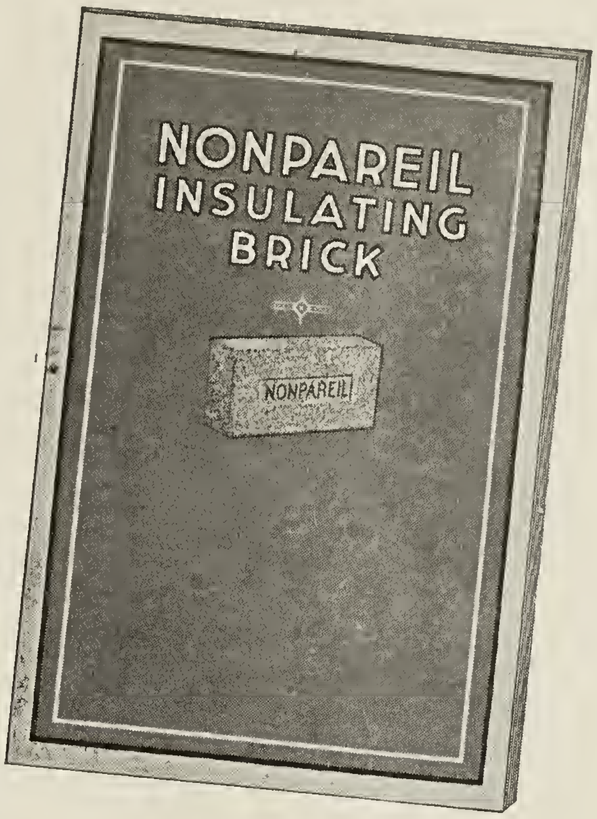
"Don't you pay your salesmen a salary or a commission? Do you state on your bills how much they get paid for landing the order for you? When I hand you this order I am to this extent your salesman. What's the difference?"

"Our representatives, whether on salary or commission, are known to be in our employ and to be paid by us. We could not employ the purchasing agent of a steel company to sell our brick to his own company and pay him a secret salary or commission for working for his own firm. We would be sorry to find that our purchasing agent was being paid by firms to sell supplies to himself. When he approves a bill for us to enter and voucher up, we do not expect it to contain a commission for himself."

"Then I'll see the old man, and he'll soon tell you where to head in," declared Blank, as he started for the general manager's office.

"I've wanted for some years to tell that fellow my views of his business ethics," remarked the sales manager to an assistant who had been vainly trying to appear oblivious to the dialogue. "Now I have had the chance to do it."

"Won't we lose orders by taking this course?"



For Kiln Insulation See Page 44

KILN insulation, the logical outgrowth of high-cost fuel, is fully explained in this 72-page book. A copy sent free with a sample brick. Write for it.

Armstrong Cork & Insulation Company
149 Twenty-fourth Street, Pittsburgh, Pa.

Adaptability

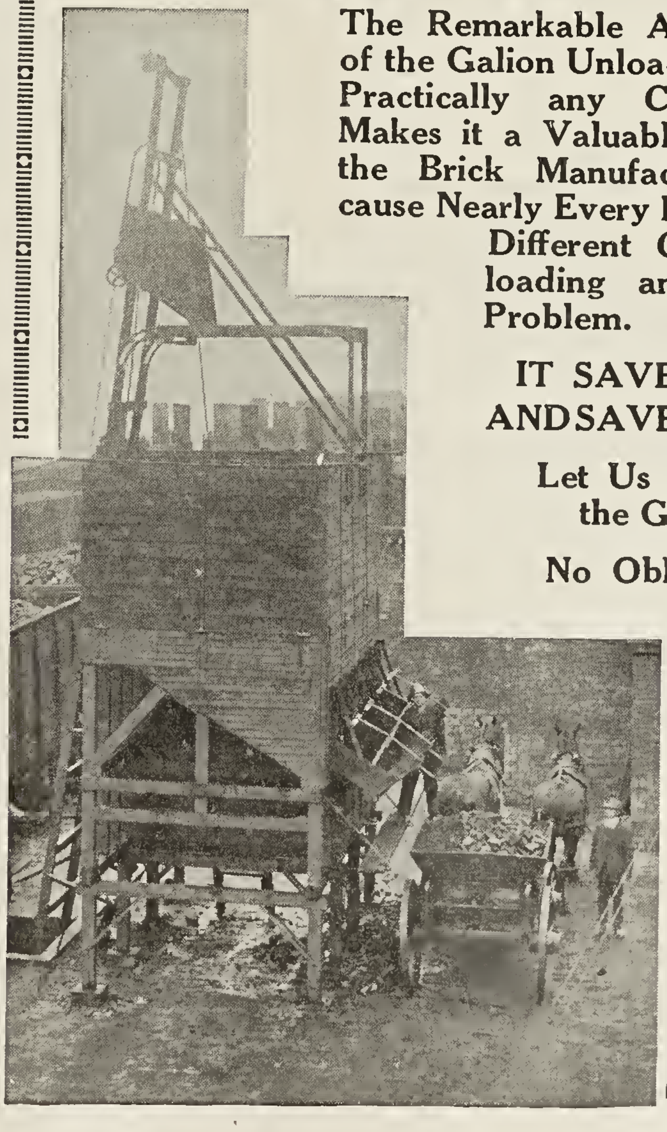
The Remarkable Adaptability of the Galion Unloader to meet Practically any Conditions Makes it a Valuable Asset to the Brick Manufacturer, Because Nearly Every Plant Has a Different Coal Unloading and Storing Problem.

IT SAVES TIME AND SAVES MONEY

Let Us Explain the Galion

No Obligation

The GALION Iron Works & Mfg. Co.
Galion,
Ohio



"Sturtevant Drying Systems
Are Economical, Efficient, and Sure"

YOUR drying process may appear too complicated—or perhaps too simple for an efficient drying system.

But it will cost you nothing to have competent engineers suggest a method to obtain better results.

These men work in close cooperation with our laboratory where drying specialists solve problems peculiar to the ceramic industry.

You may obtain this service if you desire. Our engineer will call at your request.

B. F. Sturtevant Company
HYDE PARK BOSTON, MASS.
749

Announcement

The American Dressler Tunnel Kilns, Inc., will have a message for the clay products industry in the near future which will be of considerable interest.

The message will appear in this paper at the earliest possible moment. In the meantime we are, as usual, ready to serve you.

American Dressler Tunnel Kilns, Inc.
1740 East 12th St. CLEVELAND

"Perhaps; but we can try harder to sell to those who do their own purchasing, and I feel sure we will gain in the end."

"Why do glass house people stand for such practises?"

"Most of them don't. Those that do, put themselves at a disadvantage, and we ought to be strong enough to live without their trade."

Just then Blank returned with a countenance resembling his name. "Where did you get that guy you have for general manager? When I found a stranger on the job, I had to explain the whole system to him, and he told me to go to the devil. So here I am back again."

"Thanks for the compliment. But why come back to me?"

"Because we are under contract to do this work by the middle of August and we knew before we came here that no one else could make July deliveries. Go ahead and fill the order at your own figures, and we will have to add something extra to orders for other supplies to make good our loss. Thank goodness other people are not all so particular."

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

DOWNER TAKES A VACATION

Hal C. Downer, president of the Malvern Fire Clay Co., Malvern, Ohio, is enjoying a two weeks' vacation.

Mr. Downer drove from Malvern to New York during his vacation and made several stops at points where there was any business in sight. Hal says he makes such good hollow tile that it is really fun to sell it and no doubt he enjoyed himself buying gas and taking orders. He expected to be back in Malvern about November 1.

HOWARD TRAVELS TO GAME VIA AIRPLANE

Emmet Howard, president and manager of the Columbus Face & Fire Brick Co., of Columbus, who is an ardent football fan had a rather unusual experience October 20, when he together with two friends flew from Columbus to Ann Arbor, Mich., to witness the annual struggle between the university of Michigan and Ohio State University. The party left in an enclosed De Haviland airplane Saturday morning and made the trip to Ann Arbor in two hours and 20 minutes. After witnessing the defeat of Ohio, the party returned Sunday morning in two hours flat. It was a remarkable sensation, according to Mr. Howard. A game of cards was played while in the air. The plane flew at the average height of 3,000 feet.

GUST RINGLE DIES SUDDENLY

Gust Schram Ringle, of the Ringle Brick Co., Wausau, Wis., passed away suddenly on Oct. 3, 1923. Mr. Ringle was well known in the clay industry, especially in Wisconsin, where he has been active for many years. He comes from a family of brickmakers and learned his craft thru hard knocks and many years of experience. His apparent good health just prior to his demise made his death come as a shock to his friends.

DEATH TAKES F. J. HEWSON

F. J. Hewson, manager of the Hydraulic-Press Brick Co., of Minneapolis, Minn., passed away on Thursday, October 25, at his home in Minneapolis. He was well known, especially in face brick circles and in his death the industry has suffered a distinct loss.

BIRMINGHAM PRICES STEADY

Prices on brick, tile and other clay products in Birmingham, Ala., continue stable, while the demand is on the in-

Gates Stokers Save Money

Out of every dollar spent for coal used in the old fashioned hand-firing of kilns, from 20 cents to 50 cents is needlessly wasted.

The Gates Automatic Kiln Stoker

Produces higher percentage of perfect wear;

Gives accurate control and distribution of heat;

Increases output and efficiency;

Uses soft coal screenings instead of high grade coal.

The above are honest statements of facts which we are willing to prove to your satisfaction.

CLAY SERVICE CORPORATION
128 N. Wells St., Chicago

Increase the value of your product by improving the color with

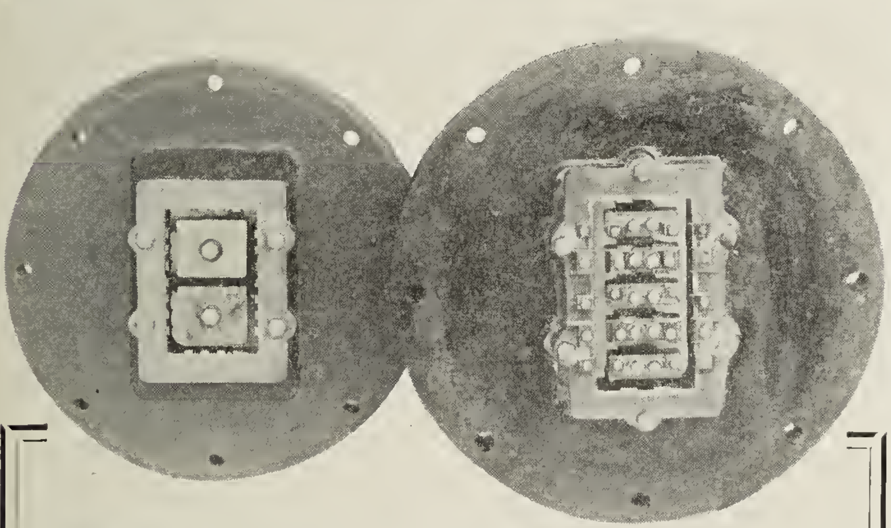
LAVINO
BRAZILIAN MANGANESE

"Best for Face Brick"

Economical
Adaptable to any Clay
Intense Staining Powers
Various Effects Obtainable
Uniform Analytically and Physically

Liberal samples and full information gladly furnished upon request.

E. J. LAVINO and COMPANY
Bullitt Building Philadelphia, Pa.
Grinding Plant: Plymouth Meeting, Pa.



We Can Furnish It

No matter if it is a die of ordinary construction or of intricate design or construction, we can furnish you the best.

We do not build a universal die of one construction to meet all machines and material but build them to meet YOUR individual requirements.

We use the best of materials in the construction of our dies.

All parts are interchangeable to replace worn parts.

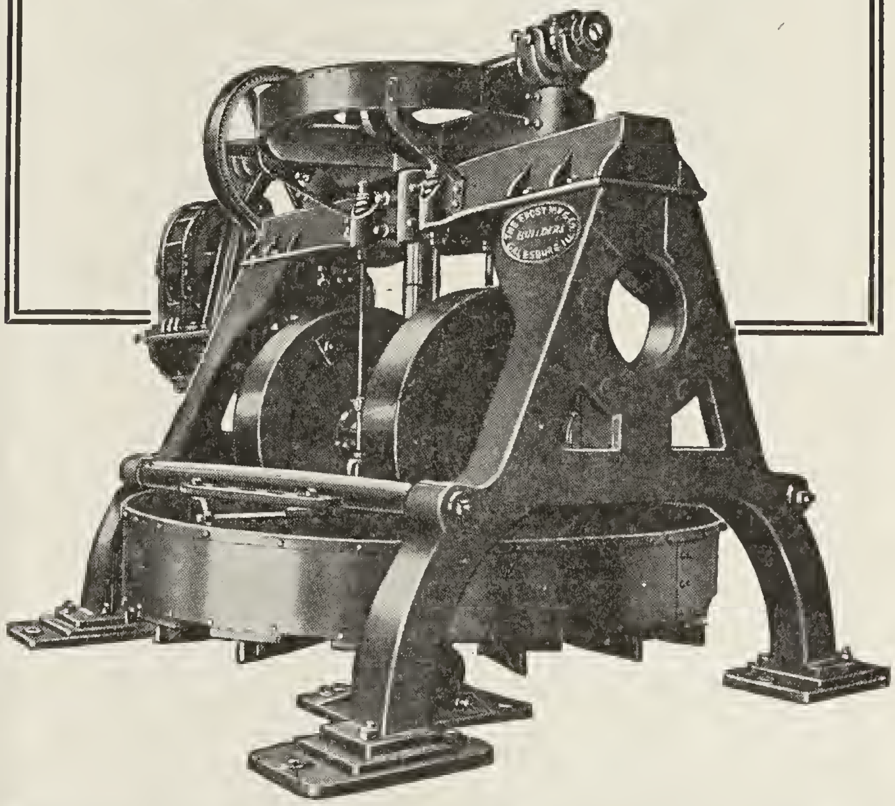
When you want dies of sterling quality—dies scientifically built—then equip with the Lincoln dies.

The Lincoln Machine Co.
MINERVA, OHIO

BETTER QUALITY WARE

That is the result when Frost Dry Pans are put on the job.

THE FROST MFG. CO.
GALESBURG, ILLINOIS



QUALITY ECONOMY SERVICE

Dryer, Transfer and Clay Cars,
with Flexible Bearings.
Switches, Turntables and Track.

THE CHASE FOUNDRY & MFG. CO.
COLUMBUS, OHIO

CHASE

CAUCASIAN
OXIDE MANGANESE
Powdered—Granular
For Speckled Effects

PRECIPITATE
CARBONATE BARIUM
For Prevention of Scum
Thereby Producing
Deeper and Richer
Color

THE
ROESSLER & HASSLACHER
CHEMICAL CO.
New York

Chicago
Boston
Philadelphia
Trenton
New Orleans
Pittsburgh
Kansas City
Cleveland
San Francisco

crease and practically all plants are operating at capacity. Many of the brick and tile plants have booked orders several months in advance. Manufacturers of clay products of all kinds are predicting a most prosperous year for 1924.

MAY DEVELOP NEW FOUND CLAY

D. A. Jackson has discovered a vein of brick clay on his farm about one mile south of Jasper, Ala. The clay is from three to five feet in depth and extends over a large area of lands. He has contracted with outside parties to establish a brick plant adjacent to his lands, and the plant will be in operation next spring, with a capacity of 35,000 brick daily, it is reported.

TILE PLANT TO INCREASE CAPACITY TEN TIMES

The California Clay Products Co. of Southgate, Cal., is planning to increase the capacity of its plant to ten times its present size, it is reported. The local demand for ornamental and other clay products is so great that it was found very difficult to fill orders at the present time. When the first unit of the new plant is completed, about the first of next year, the California Clay Products Co. will be prepared to do five times as much business as they do now, it is stated. When the entire plant is completed the company expects to handle a total annual business of $1,500,000, as compared to the present total of $150,000. The specifications of the new plant provide for the construction of two units, the first to cost $100,000 and the second approximately $250,000. The California Clay Products Co. owns clay deposits near Cardiff-by-the-Sea which are said to be fine quality white-burning clay and would bring more than $2,000,000 if sold at the regular market price per ton. When ready for occupancy the entire plant will employ about 300 men in the manufacture solely of colored bathroom tile and wall fixtures, colored wall and floor tile, white and colored soap dishes, Moorish and Spanish style of decorative tile for interior and exterior use, terra cotta and Faience tile, and also colored garden tile. Mr. Victor Kremer is president of the company and associated with him are W. N. Hamaker, vice-president of the Continental National Bank in Los Angeles, S. C. Hagen, manager of the foreign department of the same bank, Arthur W. Savage, president and founder of the Savage Fire Arms Co. and Savage Tire Co., and R. B. Keeler, who has had many years of experience in the clay products industry.

BRICK INDUSTRY IN SOUTH DOES LESS BUILDING

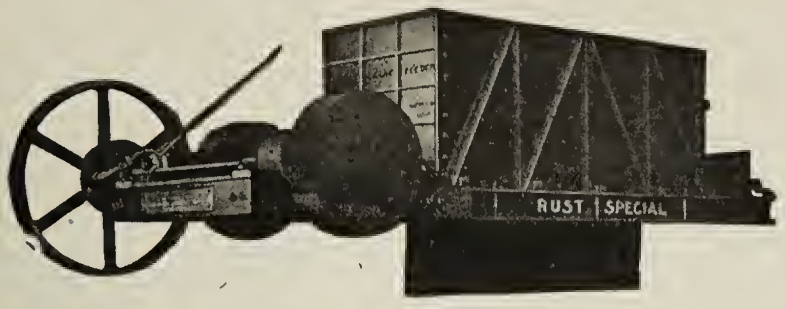
According to information reaching Atlanta, Ga., from a reliable source there were only half a dozen new construction products announced in the South during September by the brick and clay products industries, this including construction of new brick or other clay products plants, and additional construction by existing companies. This is considerably below the average that has been maintained for the first eight months of the year—January to August, inclusive—the average being about 100 per cent. greater than the September total. The first nine months of the year the total of such projects announced by the industry in the South has exceeded 100.

INSTALLS ELECTRIC SHOVEL

The Shale City Brick Works, east of Aledo, Ill., recently installed a new electrically driven shovel for clay digging. The new shovel is one of the most modern and up-to-date of its kind in the country and represents an original investment of $28,000 and will eliminate the work of 14 men. It weighs 75 tons and is powerful enough to perform its work despite climatic conditions, winter and summer.

EMBRYO MASONS BUILDING SCHOOL

A vocational school building containing 80,000 brick is being built by the bricklaying classes of the Evansville, Ind.,



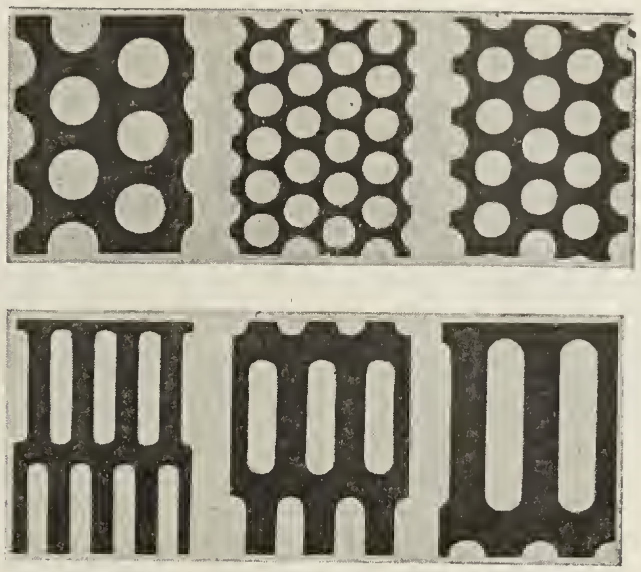
Improve Your Mix
with the
MARION
"RUST SPECIAL"
Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing Rust Feeder and full line of Marion clay plant equipment.

Marion Machine Foundry & Supply Co.
P. O. Box 395
MARION, INDIANA

Perforated Steel Screens



For Screening Clay, Shale, Sand, Gravel, Stone and Cement

All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

Sheets furnished flat or rolled to shape for revolving screens.

THE HARRINGTON & KING PERFORATING CO.

5639 Filmore St., Chicago, Ill.
NEW YORK OFFICE: 114 Liberty St.

No Labor Worries with a
BAY CITY EXCAVATOR

The Mohawk Brick Company, Mechanicsville, N. Y., installed a Bay City Excavator early this spring. They write as follows:

"We are very well pleased with the machine. It is inexpensive to operate, doing all the work which we want it to do, and we realize that if this machine had not been installed this spring, we would have had considerable difficulty in digging our clay owing to the present labor conditions.

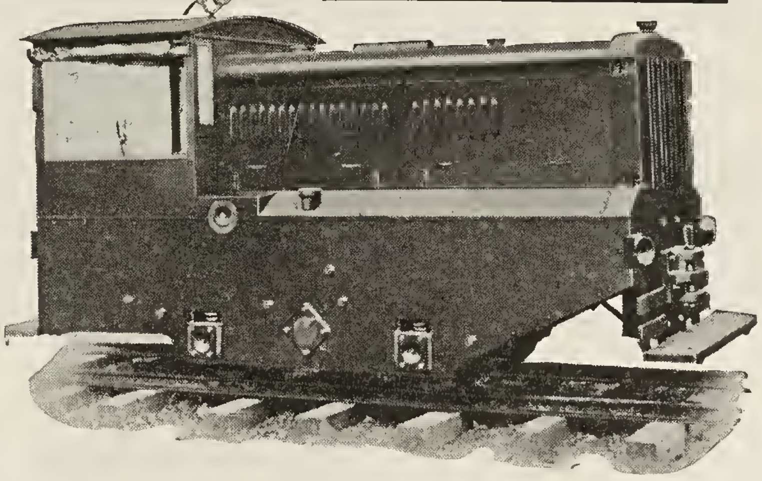
"We recommend the machine very highly."

The labor-saving factor alone should warrant your full investigation of the Bay City Excavator.

Write for complete details

THE BAY CITY DREDGE WORKS
BAY CITY, MICHIGAN
New York Office—154 Nassau St.

MODEL "F" 6 TON



The Proof of Durability Lies in Service

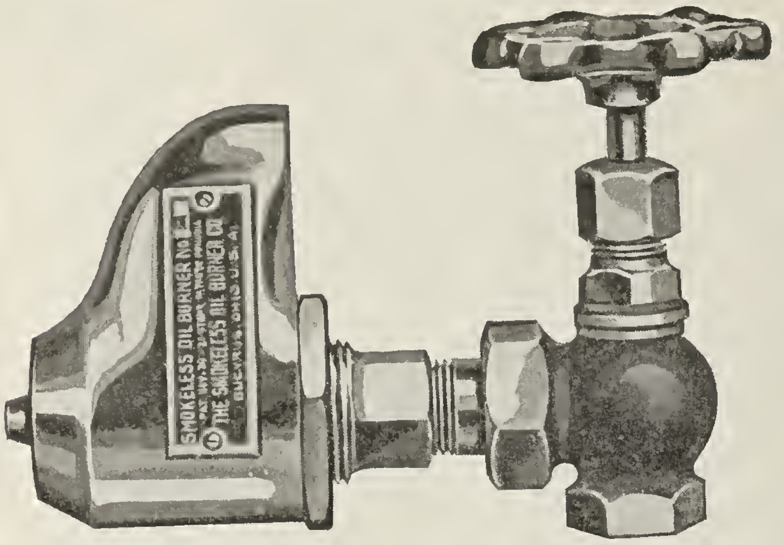
The service which users get from the MINSTER Locomotive bears out our contention of "Longest Life, Uninterrupted Service."

Made in 2 to 8 ton capacities.

Write for catalog.

The Industrial Equipment Company
510-512 Ohio St. MINSTER, OHIO
Eastern and Export Department:
The Herbert Crapster Co., Inc., 1 Madison Ave., New York City

MINSTER
INDUSTRIAL LOCOMOTIVES



THE efficient and economical installation is a permanent profit to every brick yard equipped with Smokeless Oil Burners.

More and more, brick men are discovering that Smokeless burners eliminate uncertainty of bad burns and increase the average of good brick throughout the kiln.

Experiments are a waste of time and energy. With a reliable burner and expert service men, the Smokeless can meet your every demand.

The Smokeless Oil Burner Co.
Bucyrus, Ohio

Let A Robbins Portable Car Unloader Unload That Car For You!

It will load directly into a motor truck or wagon, filling the largest conveyance in a few minutes or it can be extended to serve a storage pile by the use of a separate portable conveyor as shown above.

The Robbins Portable Car Unloader can be operated either above or below the rails. It will handle 30 or more tons per hour which means greatly reduced handling costs and elimination of demurrage charges. Thus it pays for itself over and over again.

Remember that the Robbins Portable Car Unloader does not cost a lot of money to buy but it saves a lot of money when used. Think it over. Then write for the details.

Robbins Machinery & Supply Co.
444 W. Grand Ave. Chicago, U. S. A.
"Machinery for Moving Merchandise"

public school as part of their course in vocational training. This will not only save the city of Evansville many thousand dollars, but it will help supply the demand for bricklayers by turning out men with practical experience.

STANDARD NOW ALL YEAR PLANT

An addition to the plant of the Standard Brick Co., Evansville, Ind., was completed recently. A clay storage room to store raw material has been erected. The addition will enable the company to continue operating during the winter months instead of shutting down during the cold period. Arrangements have been completed for the installation of crushing and pulverizing machinery. The entire plant will be electrified. It is expected that the production will be greatly increased.

BRAZIL CLAY CO. ANSWERS FALSE RUMORS

The failure of the Clay Products Co., of Brazil, Ind., an organization connected with the R. L. Dollings Co., has resulted in annoyance to the Brazil Clay Co., which in several instances has been confused with the Clay Products Co. The Brazil Clay Co. is perfectly solvent and has no connection whatever with the R. L. Dollings Co. In order to set right all misinformed persons the company has asked Brick and Clay Record to publish the following statement:

"We have received information from several sources the past month, that many are under the impression that the Brazil Clay Co., Brazil, Ind., is in the hands of a receiver. We take this means to correct this erroneous impression, advising that it is the Clay Products Co., which unfortunately was connected with the Dollings' Co., which was placed in the hands of receivers, and that the Brazil Clay Co. has no connection with them whatever."

HOW IOWANS FEEL ABOUT FUTURE

In the Iowa bureau of labor report for September three different brick and tile concerns reply as follows: "Do not anticipate material decrease in business in our line in next 30 to 60 days." "Outlook slightly better than last month, but prices are being badly cut as result of an oversupply." "If corn crop comes thru business probably will pick up."

FIRE DAMAGES KENTUCKY PLANT

Fire recently damaged the commissary and office building at the plant of the Kentucky Fire Brick Co., Haldeman, Ky. The total loss was estimated in the neighborhood of $40,000.

PROGRESS STARTS UP AGAIN

The Progress Pressed Brick Co., Louisville, Ky., is burning its first kiln of brick in some weeks, having been shut down a considerable part of the summer while making improvements to machinery and the plant in general. The company has some good orders on hand.

KENTUCKY COMPANY NOW ORGANIZED

The Kentucky Face Brick Corporation, with offices in the Second National Bank Building at Ashland, Ky., incorporation of which was recently announced in Brick and Clay Record, has effected an organization with the election of A. L. Russell of Ironton, Ohio, as president, and A. J. Russell as secretary.

ANNOUNCE HIGHWAY SHORT COURSES

The University of Michigan announces the opening of its annual Graduate Short Period Courses in Highway Engineering and Highway Transport. These courses have in the past aroused considerable interest and anyone wishing further information should apply to the University of Michigan, Colleges of Engineering and Architecture, Department of Civil Engineering.

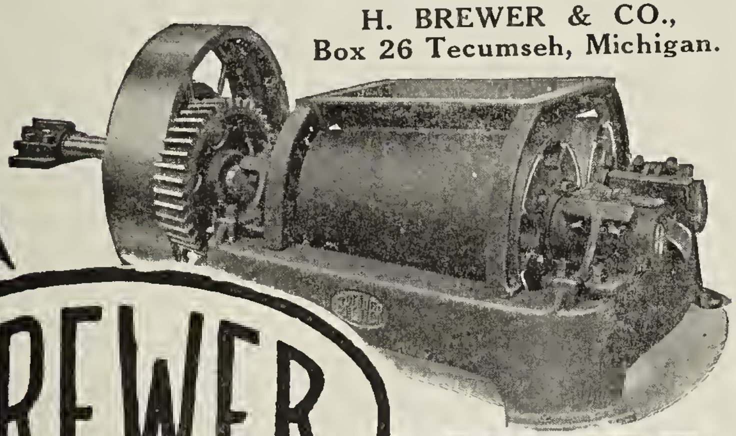
Your Guarantee! on Clay-Working Machinery

The name BREWER on clay-working equipment is a guarantee of skilled workmanship in a good machine. For back of every BREWER machine stands the experience of nearly three quarters of a century in designing and building clay-working machinery to meet a variety of needs. Block, Brick and Tile Machines, Pug Mills, Crushers, Granulators, Feeders, Disintegrators, Dry Pans, Cutters, Hoists, etc.

Free Engineering Service

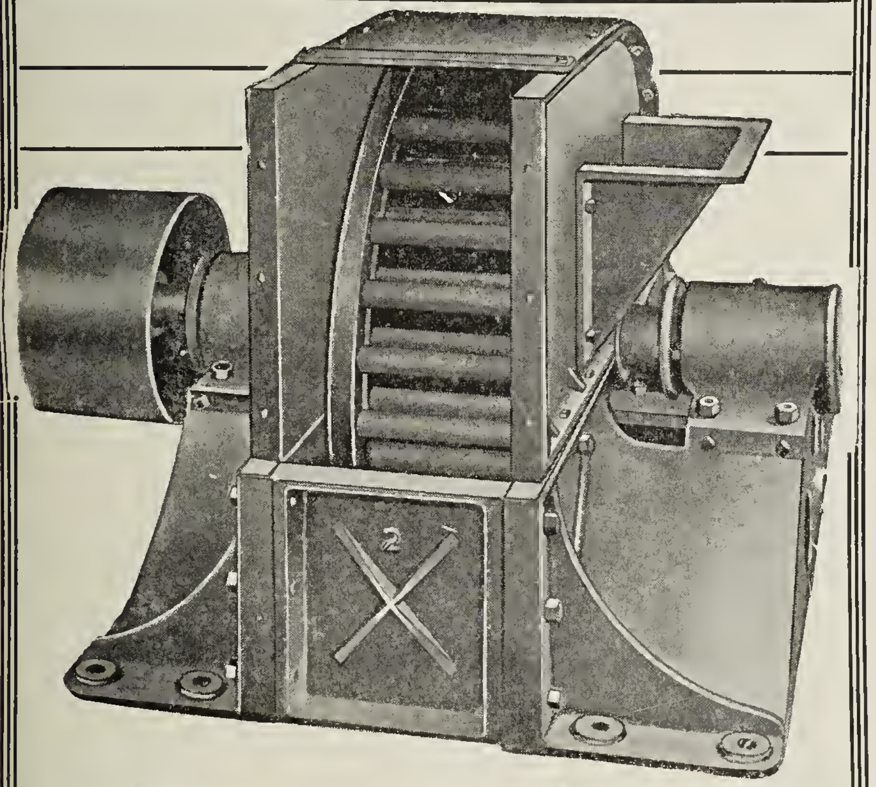
If you are about to build or make improvements, or intend using a new clay, get our free clay test. Also ask about our free Engineering Service on your plans and equipment. Complete catalog gladly sent on request.

H. BREWER & CO.,
Box 26 Tecumseh, Michigan.



BREWER

A Mark of Quality Since 1849!



SATISFACTORY RESULTS

THE quality of your ware depends largely upon your pulverizer.

Fernholtz pulverizers give satisfactory results on surface clays to every user because they are practical and economical in every respect.

All wearing parts are made of steel and all boxes are brass bushed and adjustable.

We manufacture almost everything for the clay plant. Write for catalog

Fernholtz Brick Machinery Company
ST. LOUIS, MO.

Simple, Strong, Safe

There's the story of a Caldwell Tubular Tower. It is so simple that you can erect it yourself. It is so strong that it will endure cyclones and tornadoes. It conforms strictly with approved engineering principles. The cost is moderate.

If you want these qualities in a tower, equip yourself with a Caldwell Tubular.

Send for Catalog

W. E. Caldwell Co.
Incorporated
2380 Brook Street
Louisville, Ky.

Caldwell
TANKS AND TOWERS

Made for maximum service not merely the average

TRADE JENKINS MARK

Jenkins Bros

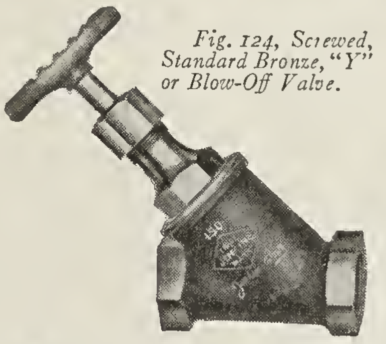


Fig. 124, Screwed, Standard Bronze, "Y" or Blow-Off Valve.

For Handling Thick Fluids

Jenkins Y Valve is an excellent valve for boiler blow-off and for handling thick or muddy fluids. It has a full opening almost in line with the flow and is fitted with Jenkins *renewable* disc and *renewable* seat rings. Made in standard and extra heavy bronze and iron body patterns.

Valves in bronze, iron, and steel for all requirements. At supply houses everywhere.

JENKINS BROS.
New York Boston Philadelphia Chicago
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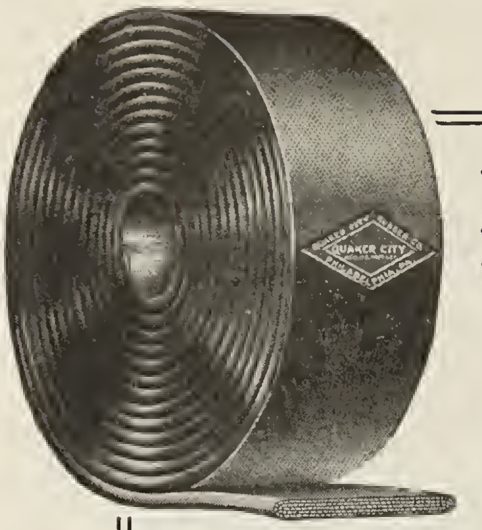
Always marked with the "Diamond"

Jenkins Valves

SINCE 1864

2960-J



Rubber Belting of Distinction

The performance of QUAKER CITY under various trying conditions in the transmission field have repeatedly demonstrated that it is indeed a belt of distinction not only in service, but in price and in quality.

QUAKER CITY is a rubber belt made especially to meet the conditions of power transmission in the brick and clay field. Faulty belts cause costly shut downs. QUAKER CITY is a belt that enables your plant to run without expensive interruptions.

We can help you on your belting problems—transmission or conveying

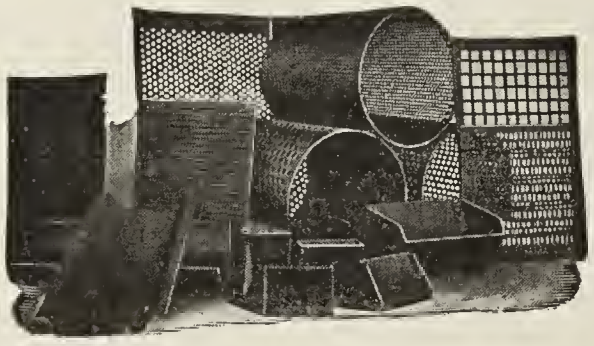
Quaker City Rubber Co.

Mfrs. Mechanical Rubber Goods—Auto Tires and Tubes

PHILA. CHICAGO PITTSBURGH NEW YORK

HENDRICK SCREENS

FOR ALL PURPOSES



ELEVATOR BUCKETS
CONVEYOR TROUGH and FLIGHTS
STACKS, TANKS,
GENERAL SHEET and
LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL
PLATE CONSTRUCTION

Ask for your copy of the Perforated Metal Handbook

HENDRICK MFG. COMPANY
CARBONDALE, PA.
NEW YORK OFFICE: 30 Church St.
PITTSBURGH OFFICE: 544 Union Trust Bldg.
HAZLETON, PA., OFFICE: 705 Markle Bank Bldg.

FIND FIRE CLAY AT CHILLICOTHE

What is believed to be the discovery of an important bed of fire clay has just been made by drillers of an oil test hole at Chillicothe, Mo., according to reports emanating from that city. The clay is found under a second vein of bituminous coal that has been discovered in the hole at a depth of 378 feet and is 12 feet thick. The fire clay has been tested to see if it can be used commercially but the test was very crude, a small vessel being made and the clay burned on a kitchen stove. No traces of lime were found and no traces of this ingredient were found when muriatic acid was applied. More of the clay is to be sent to the plants and tested in regular ovens to see if it can be used. The test holes have revealed six large deposits of coal it is said, at varying depths and if the fire clay is found to have commercial value it is expected that steps will be taken to develop both industries at Chillicothe on a large scale.

KUSA BUILDS ANOTHER KILN

An additional kiln is being added to the brick plant of the Kusa Brick & Tile Co. of Auburn, Neb. When this new kiln is completed, the company will have eight brick kilns. The present shipment is running more than 1,000,000 brick a month.

SOMERS OVERHAULS POWER PLANT

Somers Brick Co., Atlantic City, N. J., has recently overhauled its power plant, making extensive repairs to its boilers, in order to insure the greatest possible efficiency. This company has had a highly prosperous season in supplying the urgent demand of the Atlantic City contractors to whom nearly all of its output goes. The Atlantic City building supply dealers do not stock common brick, leaving the field to the Somers Brick Co. One soft-mud brick machine is operated, the daily output being 80,000 brick.

$100,000 FIRE ON RARITAN TILE PLANT

Fire broke out in the machine room of the Raritan Hollow Tile Corporation, Keasbey, N. J., early Sunday morning, October 21. The fire damaged the engine room, main building, and several other structures of the plant, but was prevented from spreading to the kilns. According to President William E. Demarest, the loss is approximately $100,000. The buildings are owned by the General Ceramics Co., Keasbey, N. J.

The fire broke out shortly after one that caused $500,000 damage at the National Fireproofing Co.'s Standard plant which is within half a mile of that of the Raritan Hollow Tile Corporation.

FIRE DESTROYS NATCO PLANT

The Standard plant of the National Fireproofing Co. at Keasbey, N. J., was completely destroyed by fire on the night of October 20, entailing a loss estimated at $500,000 by Superintendent W. Guy Weaver who said that as soon as a satisfactory adjustment of the loss has been arrived at with the insurance companies, plans for rebuilding will be taken up for immediate consideration.

The plant, which specialized in the production of hollow tile and conduits for underground cables, had been in operation for about 20 years and gave employment to about 200 men. The main plant, 25 round down-draft and one 14 chamber continuous kiln, dryer, and intra-plant haulage equipment were destroyed by the flames, as were several trestles and railroad connections. The cause of the fire is unknown. Scarcity of water hydrants made necessary the stretching of fire hose a quarter of a mile to the Raritan River, fire departments of Perth Amboy, Metuchen, Fords, and Woodbridge assisting the Keasbey department in fighting the flames. Ten men at work when the fire broke out

Blazing The Way To

Decreased
Fuel
Consumption

The increasing application of the Russell Tunnel Kiln is the most convincing proof of the truth of our claims. Our first installation was made years ago when the belief was current that the periodic down-draft kiln was the peak of efficiency. Since that time labor and fuel costs have risen to exorbitant figures and the saving effected by a tunnel kiln assumes a still larger aspect. Large concerns have become responsive to every suggestion to conserve energy as its scarcity and cost become a more imminent problem.

The Russell Tunnel Kiln is serving the clay industry by greatly decreasing fuel consumption due to continuous operation. A few of the benefits that have followed in the wake of Russell Tunnel Kiln installations are:

(1) Fewer kiln losses because of uniform temperatures.
(2) Decrease in fuel consumption.
(3) Decrease in burning time.

Our Engineers will consult regarding your burning problems at your request

Russell Engineering Company
Boston ST. LOUIS New York

Russell

FOUNDED 1846 INCORPORATED 1856 NEW YORK BELTING & PACKING CO.

Rubber Goods
for the Clay Industry

Test Special Rubber Belting
Indestructible Conveyor Belting
Elevator Belting
Firo Superheat Sheet Packing
Indestructible Sheet Packing
Cobbs Piston Packing
Steam Hose Water Hose
Pump Valves

NEW YORK BELTING & PACKING CO.
New York Boston Chicago
Philadelphia Pittsburgh
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An Ironton handling rock cars in a limestone quarry.

ECONOMICAL haulage, as applied to your special conditions, is assured by a thorough survey from our Sales Engineers. There is no obligation on your part if you allow us to submit facts and figures concerning your particular problem. We will not recommend an IRONTON Storage Battery locomotive unless we know it will produce satisfactory results.

THE
IRONTON
STORAGE BATTERY LOCOMOTIVE

THE IRONTON ENGINE CO., Ironton, Ohio

BRANCH OFFICES:

561-3 Union Arcade Bldg.
Pittsburgh, Pa.

905 14th St.
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Columbus, Ohio

Miners Bank Bldg.
Wilkes-Barre, Pa.

1308 American Trust Bldg.
Birmingham, Ala.

711 First National Bank Bldg.
Fort Smith, Ark.

THE MINTER SYSTEM
—200 Lbs. Coal per Ton of Ware—

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. Saving first cost of 6 tunnels and equipment.

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

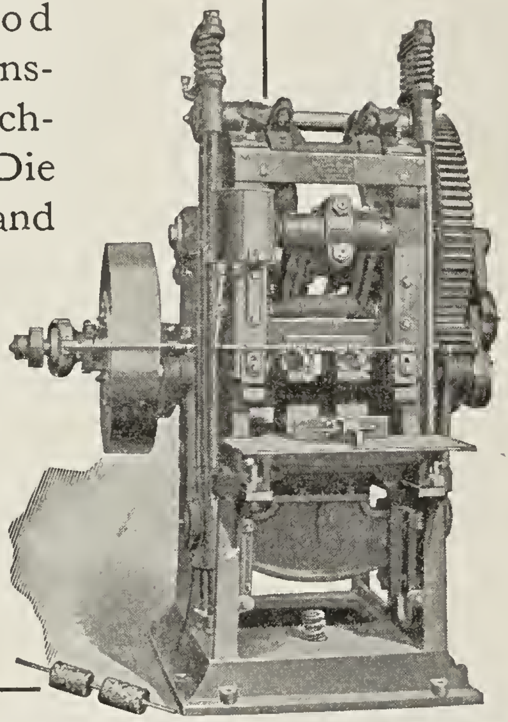
DON'T BUILD BEFORE YOU KNOW

The Minter System Plants are Producing the Cheapest Building Material made in America today.

The Minter System

HOME OFFICE
Albany, Georgia

BRANCH OFFICE
215 Doctors Bldg.
Columbus, Georgia



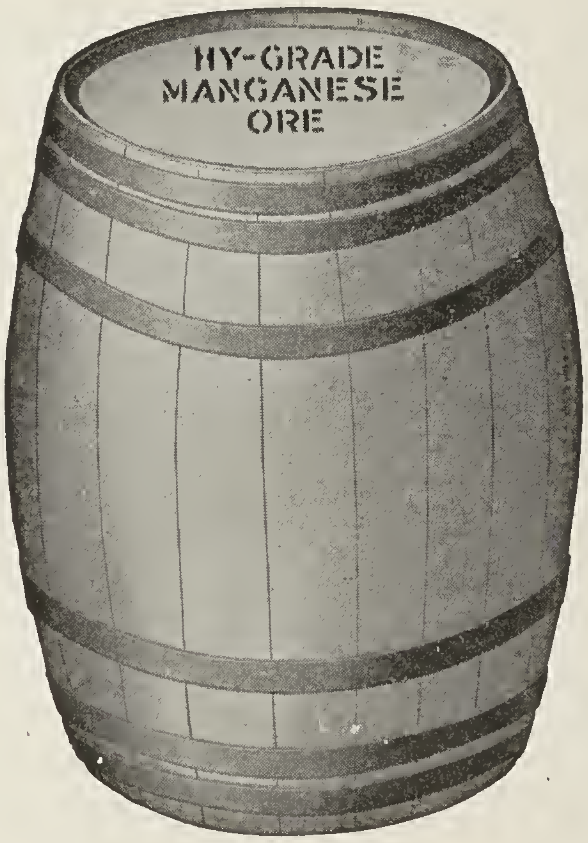
ROBINSON
CLAY MACHINERY

ROBINSON equipment includes everything for the clay plant.

See Our Catalog in the Clay Products Cyclopedia

We manufacture the Lakewood Dryer and Transfer cars, the Richardson double Die Steam Repress and the Pittsburgh Hot Air Dryer, mine cars and barrows.

Frank H. Robinson
Incorporated
918 Behan Street, N.S.
PITTSBURGH, PA.



HY-GRADE MANGANESE CO.
WOODSTOCK, VA.

Miner and Grinders

Especially Prepared for Brick Making

escaped without injuries, and 25 horses used in hauling clay from the pits were rescued before the stable fell a prey to the flames.

HUDSON RIVER SHIPS MORE BRICK IN 1923

Arrivals of Hudson River brick in the New York market up to October 14, 1922, were 1,258 barges of 400,000 brick each, a total of 513,200,000 brick. This year's total from January 1 to October 15, is 1,435 barge loads, a total of 574,000,000 brick. This increase in delivery was made in spite of the inrush of foreign brick and the introduction in New York of great quantities of synthetic brick of various compositions.

BUCKEYE TILE PLANT STARTS

The Buckeye Tile Co., Chillicothe, Ohio, has started operations. This company manufactures sewer and building tile.

FAIL TO SELL MONROEVILLE PLANT

No bids were received when the property of the Monroeville Clay Products Co. was offered for sale at Monroeville, Ohio, by court order. No bids were submitted when the property was offered for sale several months ago. The appraised price was about $104,000.

REBUILDING WORK ALMOST COMPLETED

Work on the erection of the new plant of the American Vitrified Products Co. at Lisbon, Ohio, is nearly completed. Machinery now is being installed in the buildings and it is expected actual production will be started early in November. This plant replaces the one which was badly damaged by fire early in the spring.

SAY BURTON-TOWNSEND WILL COME BACK

The Burton-Townsend Co., Zanesville, Ohio, one of the companies involved in the R. L. Dollings Co. failure, is surely coming back. This was the statement of receivers for the company, following an inspection trip of the holdings. The local plant in addition to being in good condition now has been shipping large orders and has orders booked to insure steady operation until the first of the year. The plant is now shipping a full train load of clay products from the city each day.

A CORRECTION

Brick and Clay Record's attention has been called to the fact that an item was recently published in its columns which aided and abetted "the enemy." This item called attention to the success of the Gulf Coast Pipe Co., Inc., at Houston, Tex., stating that the company manufactured sewer pipe and other clay products. The source of information was incorrect—the company is a concrete products company and manufactures concrete sewer pipe.

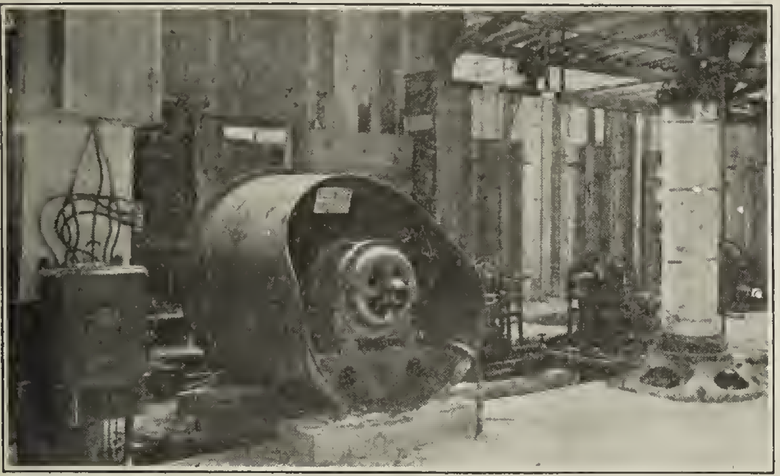
COMPLETE ORGANIZATION PLANS

Organization of the Inland Fire Brick Co., 1253 East Fifty-fifth Street, Cleveland, Ohio, has been completed. The company recently was incorporated with a capital stock of $25,000 to deal in all kinds of refractory brick and also to manufacture high temperature cement. George S. Davies is president and treasurer of the company, and Charles A. Butner, vice-president and treasurer. Mr. Davies formerly was connected with the Dover Fire Brick Co., Hydraulic-Press Brick Co., and the Harbison-Walker Co. At the present time he is district sales manager of the Ashland (Ky.) Fire Brick Co.

NATCO RESUMES DIVIDEND PAYMENTS

The National Fire Proofing Co., Pittsburgh, Pa., announced the resumption of preferred dividends, declaring

Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

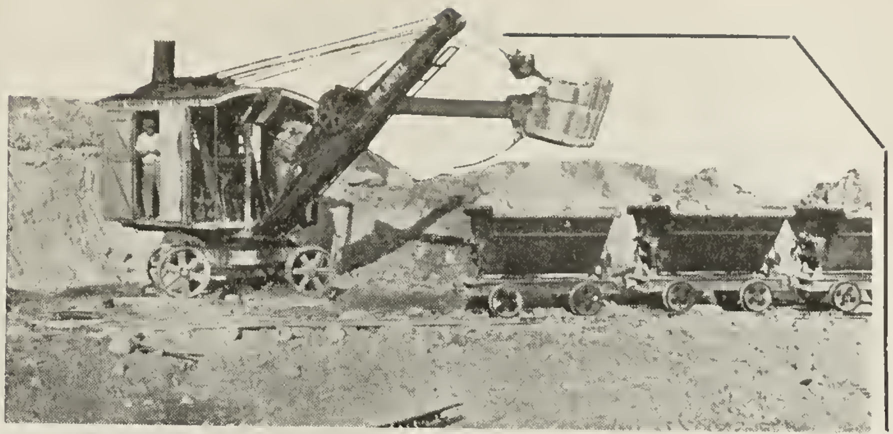
Ask for information regarding T-J System of Burning Oil.

Tate-Jones & Co. inc.

Furnace Engineers Established 1898

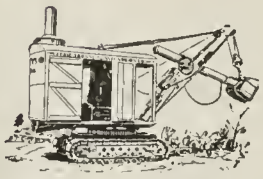
PITTSBURGH, PA.

New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis



"No Shovel can Beat the 'A' ERIE for a clay pit"

Writes G. W. Isenhour & Sons—



"We have been digging stiff pipe clay with our 13-ton ERIE Shovel for the last 18 months, and its low cost and ease of operation have proven it an excellent machine for our work. The 'A' ERIE is giving us most satisfactory results"—*G. W. Isenhour, Pres., G. W. Isenhour & Sons, Salisbury, N. C.*

The Type "A" ERIE often does the work of a much larger shovel and saves you money both in first cost and operating cost. We have an interesting bulletin showing just what the "A" can do on clay and shale excavation, as well as many other classes of work. Write for Bulletin B-22.

ERIE Shovels can be had either with broad tired traction wheels, standard gauge car wheels, or on the ERIE lubricated caterpillar type mounting. All easily interchangeable on the same truck frame.

ERIE STEAM SHOVEL CO.
Formerly Ball Engine Co., Erie, Pa., U. S. A.
Builders of ERIE Steam Shovels and Cranes

ERIE Revolving Shovels

A COMPLETE SERVICE

Buyers of New and Relaying Rails and Track Accessories realize that FOSTER'S complete warehouse stock means immediate shipment, attractive price and their complete requirements from one source.

1 Ton or 1000

Phone, Wire, or Mail Inquiries Given Immediate Attention

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L-B-FOSTER CO-
PITTSBURGH-PENNSYLVANIA

SALEM Genuine

Elevator Buckets

Fig. 1080 Reinforced Edge

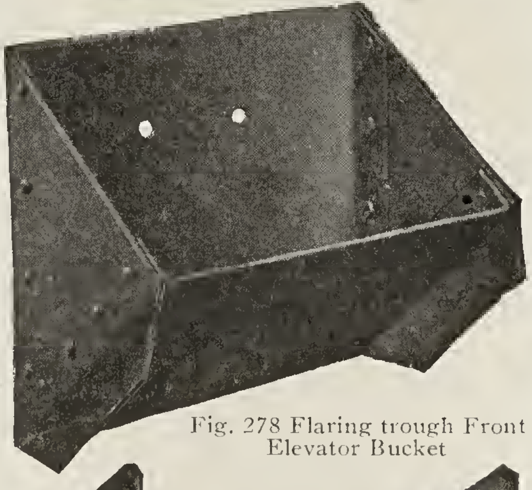


Fig. 278 Flaring trough Front Elevator Bucket

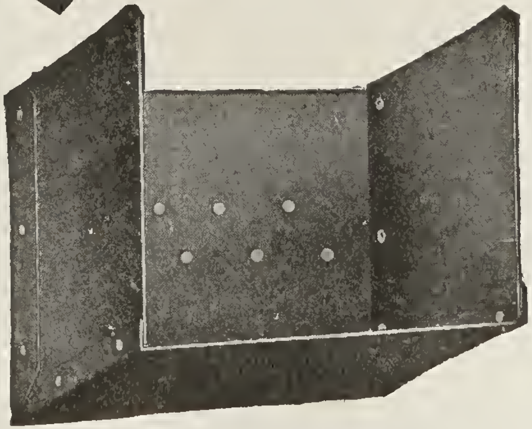


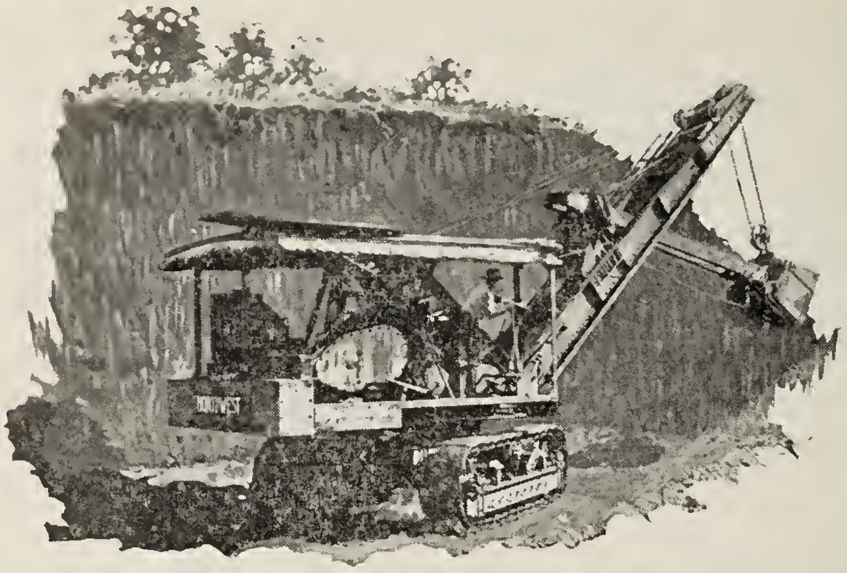
Fig. 736 Acute Heel Shelf Bucket

Since 1880, when Salem Buckets were awarded First Premium for superiority, no other make of bucket has approached the Salem in quality, long wear and unusual service. It is made in many different sizes and gauges of steel ranging from 24 gauge to 6 gauge, and is adaptable for handling materials of practically any size, shape or weight.

Our ability to furnish special buckets made up in accordance with your specifications enables us to offer excellent service and prompt delivery.

Write for Catalog 3625

MULLINS BODY CORPORATION
Successor to
W. J. CLARK CO.
101 Mill St., Salem, Ohio



No More Winter Steam Troubles

When you put a Northwest gas shovel in your pit for winter service you can say good-bye to the winter troubles of steam. No watchman in the pit, no fires to keep going, nothing to freeze or cause trouble.

NORTHWEST ENGINEERING CO.
1224 Steger Bldg., Chicago, Ill.

NORTHWEST
GAS or CRANES · SHOVELS · DRAGLINES ELECTRIC

A Cure for One of the Worst of Dry Pan Troubles

Our Dry Pan Accelerator when placed in any make of dry pan will increase its capacity 25 to 40 per cent when wet or damp material is being used. When the material is dry the Accelerator will increase its capacity about 20 per cent.

The Accelerator is a simple but wonderfully efficient device, so working that it keeps the grates or screens clean and open, regardless of dampness of the material being used, and effectually prevents either dry or damp material from collecting on the outer surface of the grates next the rim. This coating beginning at the largest place of the screening surface reduces the capacity so much that by preventing this coating the Accelerator will often pay for itself in one day's run.

Full information: Description, price and terms furnished on application

Dry Pan Accelerator Company
Carthage, Illinois

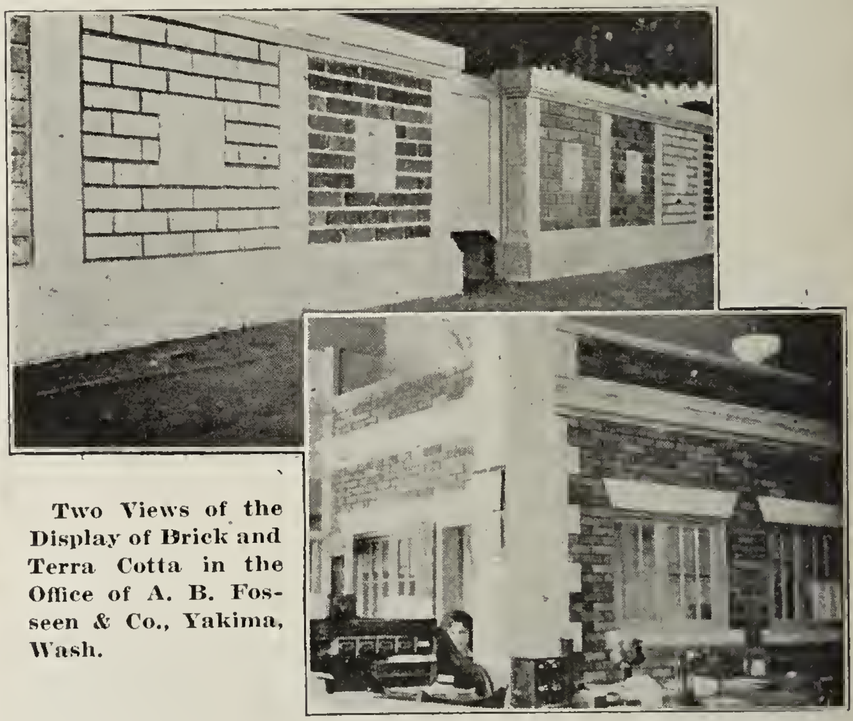
three dividends of one per cent, on the preferred stock, payable November 15, February 15, and May 15 on stock of record November 1, February 1 and May 1, respectively. Dividends were discontinued in 1920.

FORM COMPANY IN TACOMA

The Tacoma Tile & Brick Co. has been incorporated in Tacoma, Wash., with a capital of $50,000, by John Buffelen, George Brewer and Louis Mickelson, it is reported. The company will manufacture clay products.

WASHINGTON DEALERS' CLAY EXHIBIT

V. E. Piollet, vice-president and general sales manager of the Washington Brick, Lime & Sewer Pipe Co. in Spokane, Wash., has sent to Brick and Clay Record the two photographs reproduced herewith. These photographs show the office display of A. B. Fosseen & Co., of Yakima, Wash., who handle the Washington company's products in the Yakima territory. As is shown in the photograph, the base and panels for the brick as well as the top of the counter is glazed architectural terra cotta surrounding panels built of various types of brick. The lower photograph shows a small brick building in the interior of the Yakima company's office which is used as a private office. This is a very artistic display of clay products and shows up very well indeed. It was pronounced by one building material dealer to be the finest office exhibit he had ever seen. No doubt other dealers could follow this idea.



Two Views of the Display of Brick and Terra Cotta in the Office of A. B. Fosseen & Co., Yakima, Wash.

CHEHALIS PLANT MAKES CHANGES

Another big run on brick for local and southwest Washington trade has just been begun by the Chehalis (Wash.) Brick & Tile Co. Another run on building tile will be made as soon as this is completed, there being good demand for both lines. Important improvements, looking to the further efficiency of the company's plant, are being made. A tunnel underneath the highway will take the place of the small rail crossing over National Avenue. A pit 10x14 feet has been built, the walls being concrete. A tunnel 80 feet long will connect from this pit to the brick plant. Clay will be dumped into the pit and carried by a belt conveyor system. The tunnel is seven feet wide, six feet high and 14 feet high next to the crusher. It is walled with brick. The company also soon will add a new brick machinery room to the power room, which will be 25x60 feet in size. The Chehalis Brick & Tile Co. is one of Chehalis' most substantial industries and has a supply of raw material available sufficient to run 100 years, all of which is easily handled by gravity.

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men—in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Belt Conveyors and Belt Elevators	$5.00
Bricklaying in Modern Practice	1.20
Bricklaying System	4.00
Building Construction and Superintendence, Part. 1. Masons' Work	7.00
Burning Clay Wares	7.50
Ceramic Industries (A Treatise on) E. Bourry	6.00
Clay Plant Construction and Operation	4.00
Clay Products Cyclopedia	3.00
Clayworkers' Handbook	6.50
Clay Working Problems	1.50
Engines and Boilers	1.50
Engineering for Land Drainage	2.50
Finding and Stopping Waste in Modern Boiler Rooms, Vol. 2	1.00
Garages and Motor Boat Houses	2.00
Glazer's Book	1.25
Hollow Tile Silo, 100 copies	5.00
How to Build Up Furnace Efficiency	1.00
Ideas for Improving the Clay Plant	1.50
Kent's Mechanical Engineers' Book	6.00
Land Drainage	2.00
Manufacture of Roofing Tile. (English Edition)	1.25
Manufacture of Roofing Tile (Worcester)	.75
Modern Brickmaking	7.00
101 Ideas for Improving the Clay Plant	1.50
Powdered Coal as a Fuel	4.50
Practical Farm Drainage	1.75
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	5.00
Rock Excavation, Handbook of	5.00
Scientific Industrial Efficiency	2.00
Scumming and Efflorescence	.50
Silo (The Hollow Tile) 100 copies	5.00
Steam Power	3.25

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent. import duty.

Address, Book Department,

Brick and Clay Record

407 S. Dearborn Street Chicago, Ill.

We are looking for a Man—

We want to get in touch with a ceramic man that recognizes the *need* of measuring and recording temperatures, but feels that the market does not provide equipment that is satisfactory.

If You Qualify in accordance with the above specifications and will get in touch with us, we will make a study of your plant, and offer to make a trial installation and prove to you that Wilson-Maeulen Pyrometers will help you in assuring low operating costs and uniform high quality of output.

Remember Please there are no strings to this offer. Getting in touch with us costs you but the price of a letter; but if you qualify (better read the first paragraph again) and do not communicate with us, it may cost you much—it is costly—it is profit wrecking—to flounder in the Sea of Temperature.

WILSON-MAEULEN CO.

Makers of Rockwell Hardness Testers and Wilson Maeulen Recording Pyrometers

731 EAST 143RD ST. NEW YORK

From
OVERALLS *to* BROADCLOTH

THERE is a wide range of materials for clothes and a correct one for each purpose and occasion.

The word STEEL means little for there are as many different kinds and grades of steel as there are materials for human attire.

ECONOMY CAN RESULT ONLY WHEN THE RIGHT STEEL IS IN THE RIGHT PLACE.

Are any of your machinery parts giving short service on account of wear or breakage? Write us about them. State the conditions under which they operate.

We have had 181 years' experience in the manufacture of iron and steel.

Mail the coupon for free booklet, "Putting the Right Steel on the Job."

Service Department
TAYLOR-WHARTON
IRON & STEEL CO.
HIGH BRIDGE, N. J.

Service Dept.,
Taylor-Wharton
Iron & Steel Co.,
High Bridge, N. J.

Gentlemen:
Without obligation on my part, please mail me your booklet, "Putting the Right Steel on the Job".

Name..............................

Address..............................

MAIL COUPON TO-DAY

FORM COMPANY AT PARKERSBURG

The Parkersburg (W. Va.) Clay Products Corp. has been incorporated with a capital stock of $250,000, it is reported.

PUBLISHED WRONG PRICE

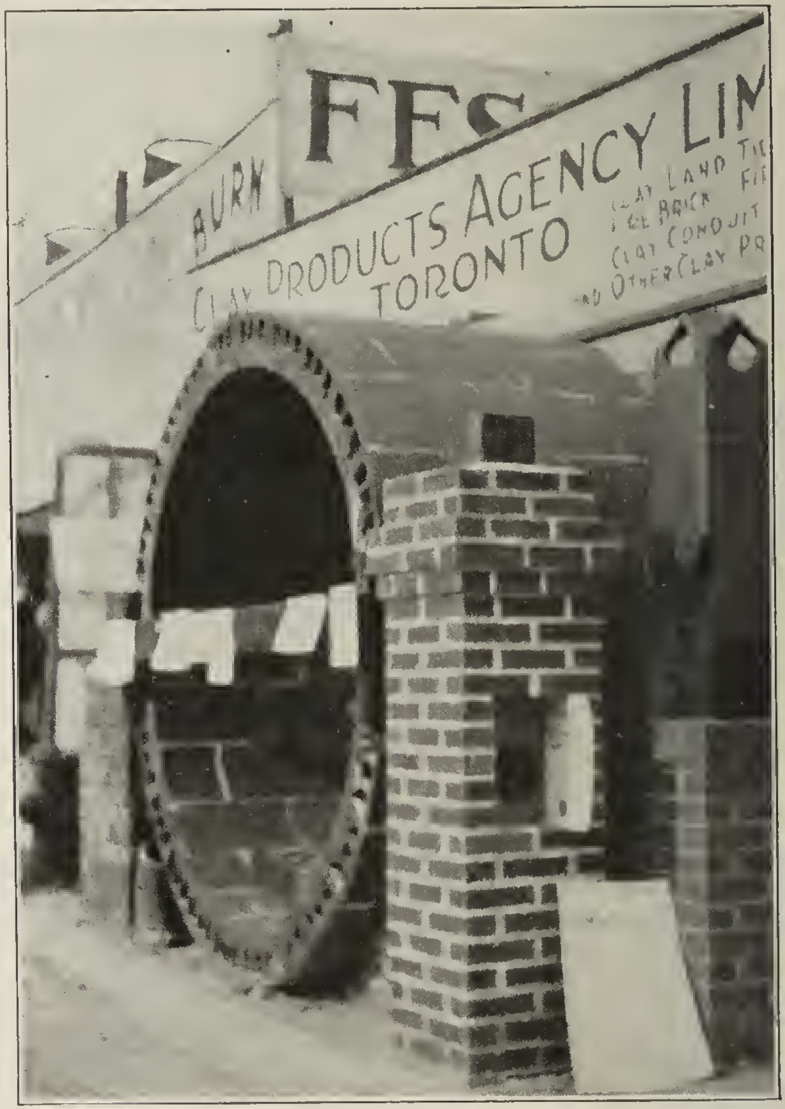
In a page of prices published in a recent issue of Brick and Clay Record, the price of common brick in Winnipeg, Ont., was reported as being $19 per thousand, delivered. The Alsip Brick, Tile & Lumber Co., of Winnipeg, writes to say that the present retail price on brick in that city is $18 per thousand and that Brick and Clay Record's figure was in error.

NEW CANADIAN BRICK COMPANY

Ontario Tile Co., Ltd., Windsor, Ont., has been incorporated with a capital of $50,000 by M. Murray Dillon and others to manufacture and deal in clay products.

AN UNUSUAL CLAY EXHIBIT

Clay Products Agency had an educational exhibit at the Canadian National Exhibition consisting of Ferguson sewer block, brick, flue lining, chimney tops, wall coping, sewer pipe, and so forth. The accompanying photograph shows the unusual manner in which the front of the exhibit was arranged. Other displays of floor tile, and so forth, were in the booth at the back.



This Striking Display of the Clay Products Agency Attracted Considerable Attention at the Canadian National Exhibition

COMPLETE NEW KENOSHA PLANT

With the completion of a brick plant on the Burlington Road, Kenosha, Wis., is now ready to supply common brick for the building industry. The new brick plant belongs to the Wisconsin Clay Products Co., a corporation set in motion by a number of Kenoshans interested, including Joseph Orth, upon whose land the plant has been built. It is estimated that the machinery already in place is worth $20,000 with $10,000 additional equipment and $14,000 invested in buildings, including the new kilns which are just being built.

More Important than the Plumb Line

WHAT the plumb line is to the brick *layer*, a Thwing Pyrometer is to the brick *burner*.

Imagine what a brick wall would look like if nobody kept constant check on the way the bricks were laid!

The *making* of bricks calls for even *more* exacting watchfulness. The burners must be on the job all the time. To aid burners—to make their work exactly right, hundreds of brick plants depend upon Thwing Pyrometers.

Thwing Pyrometers keep a constant check on temperatures at every stage of the burn, fostering as nothing else can, uniform production at lower cost and greater speed.

Write for information and evidence that a Thwing installation is an actual economy.

Thwing PYROMETERS

THWING INSTRUMENT COMPANY
3347 Lancaster Ave.
PHILADELPHIA, U. S. A.

150

SCHAFFER

If An Architect Guessed —or Estimated

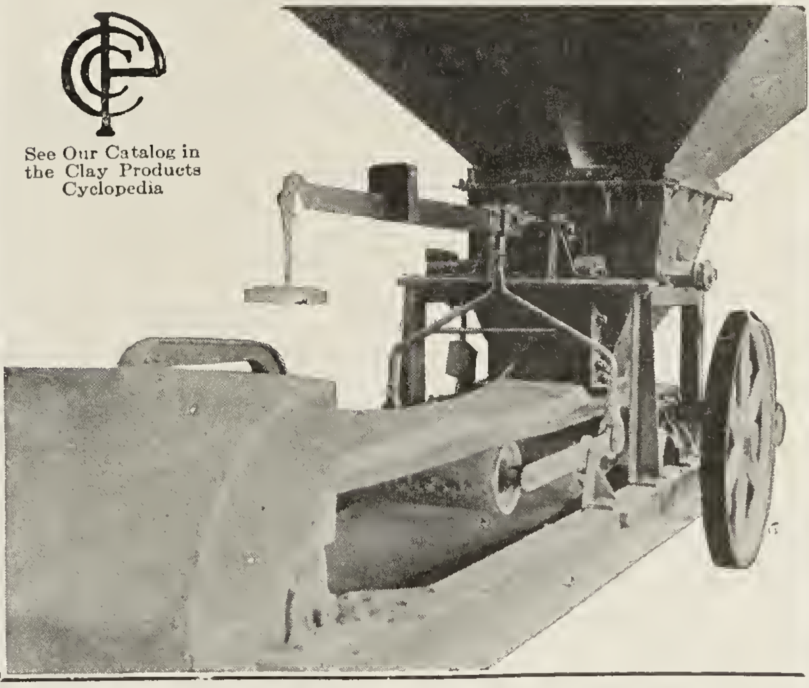
WHEN it came to figuring loads and designing structures, we'd live under very hazardous conditions and in slipshod homes.

When you guess or estimate your clay mix, you run the chance of the mix's being too "short" or too "fat" and the drying and burning's claiming a huge loss.

Install the Poidometer. It feeds as it mixes, all automatically.

Write for details today

Schaffer Engineering & Equipment Company
2828 Smallman Street
PITTSBURGH, PA.



See Our Catalog in the Clay Products Cyclopedia

POIDOMETER

This is one of the types of American Ring Crushers that will handle your job.

Can You Use a Pulverizer that—

* * *

Handles shale as a unit, without extra breaker, from man size lump to a product passing 1/8 in. grate bar?

* * *

Pulverizes in quantities of 25 tons to 60 tons per hour, depending on dampness and size of raw products?

* * *

Operates at 600 R. P. M., thereby cutting down on the power operating expense?

* * *

Crushes with great rolling rings that use 65 per cent. of their entire weight before they need be replaced?

* * *

American Ring Pulverizers

are built to answer these needs of the brick and clay industry. Scores of installations give testament to their great efficiency and low operating expense. Every one is constructed to the job. Write your pulverizing problem to us and let us explain how the American Ring Pulverizer will solve it.

See Our Catalog in the Clay Products Cyclopedia

American Pulverizer Co.

"We Crush Everything"

18th and Austin St. Louis, U. S. A.

Chicago 115 S. Dearborn St.
Cleveland 309 Plymouth Bldg.
Detroit 805 Hammond Bldg.
New Rochelle, N. Y. 92 Sickles Av.

The plant is equipped to turn out 8,000 brick an hour or approximately 50,000 brick a day.

REBUILT TORONTO PLANT ALMOST COMPLETE

The Toronto Brick Co., Ltd., whose Swansea, Ont., plant on Windermere Ave., was burned on July 16, has made speedy progress in rebuilding and expects to resume operations in the new plant at an early date. The new building is 180 feet by 90 feet, embodying the most modern ideas in construction and machinery. The company is spending $60,000 on the work and the complete plant will have a value of approximately $175,000. It will have a capacity of 50,000 brick per day. The company is also installing a drag-line at the York plant for conveying raw material from the pits to the mill.

CONCRETE BLOCK SPECIFICATIONS

At the 1923 convention of the American Concrete Institute the following proposed standard specifications for concrete building block and concrete building tile were submitted by the committee on standard building units:

"The average compressive strength of concrete block 28 days after being manufactured, or when shipped, shall not be less than 1,500 pounds per square inch of gross cross-sectional area as laid in the wall, and the compressive strength of any individual block shall not be less than 1,000 pounds per square inch of gross cross-sectional area as laid in the wall.

"The gross cross-sectional area of a block shall be considered as the product of the length times the width of the unit as laid in the wall.

"Concrete block shall not absorb more than 12 per cent. of the dry weight of the block when tested as hereinafter specified, except when they are made of concrete weighing less than 140 pounds per cubic foot. For block made of concrete weighing less than 140 pounds per cubic foot, the average absorption in per cent. by weight shall not be more than ten multiplied by 140 and divided by the unit weight in pounds per cubic foot of the concrete under consideration.

"The specimens shall be dried to constant weight at a temperature of from 212 to 250 deg. F., and the weight recorded. After drying, the specimens shall be immersed in clean water at approximately 70 deg. F. for a period of 24 hours. They shall then be removed, the surface water wiped off, and specimens re-weighed. The absorption is the weight of the water absorbed divided by the weight of the dry specimen and multiplied by 100.

Machinery and Equipment

Devices and Methods, New and Old Concerning Which Information of Interest to the Clay Manufacturer Is Published

---

SAVING 1,000 BRICK PER DAY

An item appearing in the house organ of a manufacturer of clay screens states that a certain brick manufacturer is saving 1,000 brick per day with the use of their screens.

These brick were formerly dumped on the scrap pile, and the manufacturer claims that the screen makes the brick more plastic in the wet state; assures a better bond in the green brick and greatly reduces the waste. The item further states that, "at $35 per thousand, this company effected a saving of $8,750 per year for the 250 days they operate.

Readers of Brick and Clay Record who are interested in this method of saving may obtain complete details by writing the editor.

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

Advertising

ADVERTISING, Promotion and Publicity are terms with which the clay products manufacturer has in recent years become directly concerned. Experts on advertising, clay plant executives who know the subject, and Brick and Clay Record, have all time and again said much on the topics of advertising, promotion and publicity. Apparently these remarks have had very little effect, and we have found out why.

The reason is simple enough — so many manufacturers do not know the meaning of advertising, promotion or publicity.

Is This Advertising?

We recently ran across a man who is using some space in several magazines. The space is very small—an eighth page or so and the message it contains reads something like this:

The Universal Clay Mfg. Co.

Largest Producer of All Clay Products
Face Brick Hollow Tile Fire Brick
Common Brick Drain Tile Sewer Pipe
MIDDLETOWN—KENTUCKY

This is all that was said. There was nothing suggesting the use, telling why, describing how, or asking to write for more information on clay products. This space, which he called his "advertising," has failed to produce the results desired and expected. Hence this manufacturer believes that advertising would do very little good—individually or cooperatively thru a national association. This is not an isolated case either! Rather it is typical.

The above kind of "business card" is an example of advertising as it was practiced back in 1900 when the clay plant operator referred to was a young man. But advertising was then in its infancy. It was not the business builder that it is today. Nor was it considered a profession then.

Reduces Selling Cost

Advertising in its present state of development, however, is a strong economic factor because it reduces selling expense, lowers production costs by bringing about large scale production, and encourages the production of better quality goods. A large manufacturer of a commodity outside of the clay industry, which is sold thru dealers reached a sales total of $3,500,000 annually at a selling expense of eight per cent. Then the company began to advertise, and its sales mounted to $14,000,000 a year at a total selling expense—including advertising, of only five per cent. But this was accomplished with present day advertising, which means more than placing a "card" in a publication.

Articles to Come

1. *A splendid article on* ***Firing Ware With Producer Gas.***
2. *Practical suggestions from actual experience on* ***Selling Fire Brick.***
3. ***What Is a Fair Price for Your Product.***
4. ***How to Tie in with Your Association Advertising.***

The clay manufacturer is still a novice at advertising. He has been busy developing his production methods and perhaps has not studied advertising in its many forms. Very few producers have done much in the way of publicity and of those who have but few knew how and were able to get adequate results. Advertising means more than placing attractive looking, educational copy in a magazine or newspaper. A follow-up program must be instituted if full value is to be obtained from the advertising.

It is really remarkable that face brick manufacturers have been able to cash in so well on their publicity campaign in view of the fact that few of them have really done anything to get full benefit out of it. We venture to say that the publicity that face brick is getting and which has already brought excellent returns, is capable of bringing in at least 25 per cent. more business if more manufacturers would supplement and complete it by publicity and follow-up work of their own.

Publicity Valuable

Golden opportunities for getting additional attention are often not seen. Many a little instance goes by without full advantage being taken of it. For instance, few manufacturers took occasion to tell the world that Berkeley, Cal., had a disastrous fire and that dwellings of clay products would eliminate such catastrophes.

And here is another way in which publicity may be obtained. Howard Frost, president of the Los Angeles (Cal.) Pressed Brick Co. returned from a five weeks' trip to the East recently. In the Sunday paper on October 28, 18 inches of space was given to an interview with Mr. Frost. This publicity is bound to help the Los Angeles Pressed Brick Co.—It is a form of advertising which costs nothing.

The Department of Commerce has just issued a booklet entitled "How to Own Your Own Home." Many clay manufacturers will probably glance thru it and say, "That's fine. Our dealers ought to send them around to their customers. Every prospective home owner ought to read it." But will these manufacturers help the prospective home owner to get a copy?

Use Every Opportunity

The enterprising manufacturer will take material out of this pamphlet and cash in on this authoritative information. He will prepare a pamphlet of his own, perhaps including a great deal of the Department of Commerce text and adding photos and selling talks of his own. He will leave space for his dealer's name and with the help of his dealer distribute these booklets.

There is still much to be said about advertising. We shall take up more phases of this subject in future issues. But let us emphasize this. Men, you haven't done yourself and your business justice! Advertise your own products with a campaign that is complete and modern.

A. F. B. A. Planning Good Program

AN EVEN DOZEN of meetings will have been held when the American Face Brick Association finishes its 1923 annual meeting which is to be held at the French Lick Springs Hotel, French Lick, Ind., on December 4, 5 and 6. The program for this meeting has practically been completed and includes a discussion of subjects of the utmost interest to the manufacturers of face brick. Speakers of particular talent have been secured to address the convention and the subjects closest to the heart of the face brick manufacturer will be discussed. Non-members of the association are cordially invited to attend all sessions.

Will Hold Three Sessions

Sessions will be held on each of the three days, and will be of approximately 2½ hours' duration. The first session will be held at 3 p. m. Tuesday, December 4, while the other two sessions will begin at 9:30 a. m. Provisions will be made for adjournment in sufficient time to permit those wishing to catch trains leaving for the north, east and west at 1:05 and 2:00 p. m. Thursday, to leave. The first session is to be devoted to business and will include an address by the president, James A. Adams, report by the secretary, the treasurer and the director of the service department. Following these reports the chairmen of the various committees will report on their activities. The standing committees in the association are the following:

Technical Research Committee, Committee on Standard Sizes, Committee on Advertising, Committee to Increase the Bricklayer's Supply, Committee on Building Restrictions for New Additions.

Reports of Officers

Reports of the officers of the association feature the progress made during the year past and have, at foregoing meetings, always told a story of achievement and progress. Much real constructive work has been done by the association during the year 1923 and the reports of the officers and committees will bring out the work accomplished by the association. The report of the director of service, Dr. G. C. Mars, will be especially interesting, as it will contain references to his trip to Italy, during the course of which he obtained much valuable information which will be used in the promotional work of the association.

Two extremely interesting topics will come up for discussion at the second session. The convention will be requested to take action on them. The topics are the following:

(1) An ideal form of exclusive sales rights contract between a face brick manufacturer and a face brick dealer.

(2) The endorsement, after discussion, by the membership, of objectives to be pursued by the association for the next one to three years, with desirable limitations clearly expressed.

Will Discuss Ideal Contract

The first mentioned subject will be one of the features of the meeting. Owing to many misunderstandings and controversies that have occurred in the past between manufacturer and dealer as to the exact understanding between them, committees from the American Face Brick Association and from the Face Brick Dealers' Association of America recently met and drew up an outline for an "ideal" contract form to govern relations between dealers and manufacturers.

The committee is now working on the details of this contract. It is expected that each association will submit the form to their membership for endorsement at the forthcoming meeting.

It is the idea of the joint committees to suggest the "ideal" form of contract as an entirely voluntary and optional matter for the dealer or manufacturer to use, which will be merely an outline that will call to the attention of manufacturers and dealers every matter that should be considered before enter-

Why Not Pay Us a Visit?

Brick and Clay Record extends herewith a cordial invitation to all manufacturers planning to attend the face brick convention, to visit us. Why not stop off in Chicago on your way to French Lick? Brick and Clay Record's office facilities will be placed at your disposal. We would be glad to have you use our telephone and stenographic help. You can leave Chicago on the Monon Railroad at 9 p. m., board a sleeper and arrive in French Lick at a convenient hour in the morning.

Beautiful French Lick Springs Hotel Where the American Face Brick Association Will Meet December 4

The Pluto Spring at French Lick. One of the Beauty Spots of This Delightful Resort

ing into a contract, thereby making it possible to avoid future misunderstandings.

What Should Association Do?

The second question which will come up for discussion at the second session is of the utmost importance to the membership, since it involves the work which the association is to do in the future. A comprehensive list of objectives to be attempted during the next one to three years will be submitted to the membership for discussion and action. The outcome of this discussion will determine in a large measure to just what extent the association will keep up the splendid work which it has been doing and all its various activities.

Some instructive and timely talks have been arranged for the third session of the convention. R. M. Gillespie, member of the executive board of the Mason Contractors Association of the United States and Canada, will explain just what his association is doing to increase the supply of bricklayer apprentices. Mr. Gillespie has been working on this matter for his association for a number of months past and just recently has given up his position to devote his entire time and attention to it. There are probably few men who have a better knowledge of the subject which Mr. Gillespie is going to discuss.

To Compare Clay Products Advertising

Of direct interest to the face brick man will be the talk by Louis Grilk, western manager of George L. Dyer & Co., the association's advertising agency. Mr. Grilk has prepared a series of charts showing comparative results in the exploitation of the uses of face brick, common brick, paving brick, hollow tile, terra cotta, cement, lumber and other products. This talk will be instructive and useful and will serve to show the manufacturer what an important part advertising plays in the marketing of his products. Mr. Grilk's knowledge of the face brick industry is comprehensive inasmuch as he has had a leading part in shaping the advertising policies of the American Face Brick Association.

The subject of "Labor," which is of paramount importance to the face brick manufacturer, will be discussed by Magnus W. Alexander, managing director of the National Industrial Conference Board. In his talk he will cover, more or less completely, the situation with the building trades mechanics of the country, what is being done to increase the supply; the effect of immigration on the present and future of the building trades and also upon common labor. Mr. Alexander's talk will also cover the trend in unionism and the present attitude of labor towards this institution.

Convention Promises Much

The National Industrial Conference Board is an impartial organization which devotes its time primarily to the study of business problems. The board is recognized by business men thruout the country as being eminently capable of passing judgment on economic problems and Mr. Alexander's position as director of this organization gives his remarks an authority which make them worth while.

Following the custom which has prevailed for years, the Face Brick Dealers' Association of America will hold its annual meeting at the same time and place as the American Face Brick Association.

At the dealers' meeting a full report will be made of the proceedings at the joint meeting of committees from the manufacturers' and the dealers' associations, which was held in Chicago on September 27.

"While the program cannot be announced at this time," says Burt T. Wheeler, president, "this much can be promised—that only actual paid members will be permitted to attend the meeting of the Dealers' Association this year. Those interested dealers who have neglected to send in their dues, but who wish to participate in the meeting next month, should attend to this detail immediately."

Those in charge of the program at the annual convention this year have given much time and thought to the subjects which will be discussed and are laying their plans for a convention which will equal, if not surpass, any of those successful ones which have been held in the past.

* * *

BRICK GETS SPLENDID PUBLICITY

Southern Group of American Face Brick Association certainly did things up right on the occasion of the meeting held in New Orleans, October 17. The meeting was reported in the last issue of Brick and Clay Record. On this occasion a dinner was given to architects at which some 60 architects and draftsmen were present.

Due to the enterprise of the southern manufacturers the Journal of Commerce of New Orleans devoted eight entire pages to brick. The A. F. B. A.'s book, "The Story of Brick," was reprinted, data on comparative costs of brick, frame and other construction given, an editorial devoted to the subject and in general brick was given the greatest boost imaginable.

Brick manufacturers took advantage of this publicity and ran personal advertisements on the same pages. All in all it was as fine a piece of publicity as could be desired and the southern manufacturers are to be congratulated on their business acumen in putting the stunt across. Possibly a variation of the idea could be used in other sections.

* * *

PRODUCTION IN SOUTH 35 PER CENT. GREATER THAN 1922

From the November report of the Federal Reserve Bank of Atlanta, Ga., the clay industry in the south appears to be operating on the best basis in several months, and booking the largest volume of orders since the early part of the year.

Production as compared with the same period of last year is shown to be nearly 35 per cent. greater this year, and approximately eight to ten per cent. greater than during the late summer. Brick on hand is somewhat less than at this time last year due to the increased demand, but is about 50 per cent. greater than during the later summer, due to increased production at the plants.

Orders booked are around 75 to 80 per cent. greater than the volume of one year ago, and show an improvement of nearly 15 per cent. as compared with business two months ago.

The hydro-electric power shortage, caused by lack of rainfall, has caused all industry operating by this power in North Carolina to cut down operations to five days per week, and tho the situation is equally as acute in other sections of the South, no curtailment has as yet been made necessary. Unless rainfall comes shortly, however, the situation will grow acute over the whole South.

* * *

ORGANIZED LABOR GROWING LESS

The supply of organized labor in the building crafts in the United States is apparently not being sustained, according to official reports of the average paid up membership in the seventeen building trades unions. In the last two years there has been a loss of nearly 60,000 members in these trade unions or seven per cent., while a loss of over 4,000 members has been sustained during the past year. These statistics were compiled by S. W. Straus & Co. in connection with a survey being made of national building conditions. The Bricklayers, Masons & Plasterers International Union of America has showed neither a decline nor increase in 1921, '22 or '23, the membership remaining at 70,000.

* * *

Questionnaire Reveals Optimism of Clay Industry

BRICK AND CLAY RECORD recently sent out on a postal card a questionnaire, the questions of which were intended to show in what frame of mind the industry was. Whether it was pervaded with a feeling of optimism or gloom. The answers received were gratifying both in point of numbers and in the nature of the replies made, as they seemed to show that the industry as a whole is optimistic as to the future and is getting ready for good times.

To the first question, "Are Orders for This Time of Year Normal, Above Normal or Below Normal?" about 54 per cent. found the volume of orders to be normal, about 11 per cent. reported business above normal, while 31 per cent. of the manufacturers admitted that business was below normal. At least 65 per cent. of those manufacturers who replied found business to be satisfactory.

53 Per Cent. Say Outlook Is Good

53 per cent. of manufacturers replying stated that the outlook for 1924 was good. To 20 per cent. of them the outlook seemed only fair, while only five manufacturers reported a gloomy outlook. 16 per cent. frankly admitted they did not know what the 1924 year would bring them.

Particularly gratifying was the response to the third question, "Is Labor Situation Troublesome?" Despite the enormous activity in the industry during the past ten months, the labor situation has apparently been good. At any rate, 77 per cent. of the manufacturers replying to the questionnaire stated that they had had no trouble. This compared with 20 per cent. who were troubled with labor problems. The other three per cent. volunteered no answer to the question.

Many Improvements Contemplated

To the fourth question, "Will You Add Any Special Equipment to Eliminate Some of Your Labor?" 43 per cent. replied in the affirmative and 42 per cent. said no. Of the remainder nine per cent. volunteered no answer and 6 per cent. of the replies were to the effect that labor saving equipment had already been installed.

According to the answers received to the final question regarding the installation of improvements or extensions to the plant, 40 per cent. are planning to make improvements or extensions, while 49 per cent. have no such plans in mind. Eight per cent. of the manufacturers volunteered no answer, and the balance stated that they had already recently made improvements or extensions.

This report proved particularly interesting inasmuch as it showed that the clay industry is again on a healthy basis, manufacturing and selling its products, and looking forward to bigger things in the near future. Answers to the questionnaire were received from 125 manufacturers and if their answers can be taken as representative then two-fifths of the clay industry will improve or extend plants in preparation for more and greater business.

* * *

TENTATIVE MASONRY WALL REQUIREMENTS

The tentative report of the Building Code Committee of the Department of Commerce, giving recommended minimum requirements for masonry wall construction, has just been issued. This report is submitted confidentially for criticism and discussion by those interested in the improvement of building codes and competent to discuss the recommendations. The final report when issued may differ considerably from the one now published. The publishing of the tentative report gives the clay industry an opportunity to correct any mistakes or change any wrong practices which may have been incorporated in the code.

* * *

BERKELEY BANS INFLAMMABLE ROOFS

The fact that the fire in Berkeley, Cal., shot so rapidly thru the residence section largely because of the inflammable tinderlike roofs and the flying of half-burned shingles, has caused quite a sentiment against inflammable roofs. So the Berkeley City Council the other day, after a hard-fought hearing and an assault by the lumber interests, passed an ordinance against shingle or other inflammable roofs. A noticeable demand for roofing tile has set in.

Grinding and Screening Clays

An Article Which Describes the Different Methods in Use and Gives Helpful Suggestions on Preparing Clays and Shales

J. H. Kruson, Cr. E.

A. P. Green Fire Brick Co., Mexico, Mo.

SELECTING AND OPERATING equipment employed in the preparation of any specific clay for manufacture into brick, tile, or sewer pipe requires considerable thought if this department is not to be neglected. Where large tonnages are produced this phase of plant operation can often be improved so as to increase profits, or decrease costs to a greater extent than is usually appreciated. Clay preparation needs daily attention if best results are to be obtained. The kind of machinery used, the weight of dry pan mullers, class of screens, character of clay, and so forth, are some of the factors which influence the economical operation of this phase of clay ware fabrication. In this article some data gathered from actual plant operations are given.

Clays Differ in Physical Characteristics

To begin with, there is a marked difference in the physical properties of clays as they come from the mine, bank or pit. Clays seem to vary from one extreme to the other in strength, hardness and working qualities. Some shales are soft, brittle and have little strength, while others are very hard, tough, rigid and require heavy blasting before a steam shovel can operate in the deposit. Frequently, a soft sandy or soft gummy clay will be encountered. Most fire clays are hard, especially the flint fire clays. Obviously the hardness of a clay affects its grinding and screening properties.

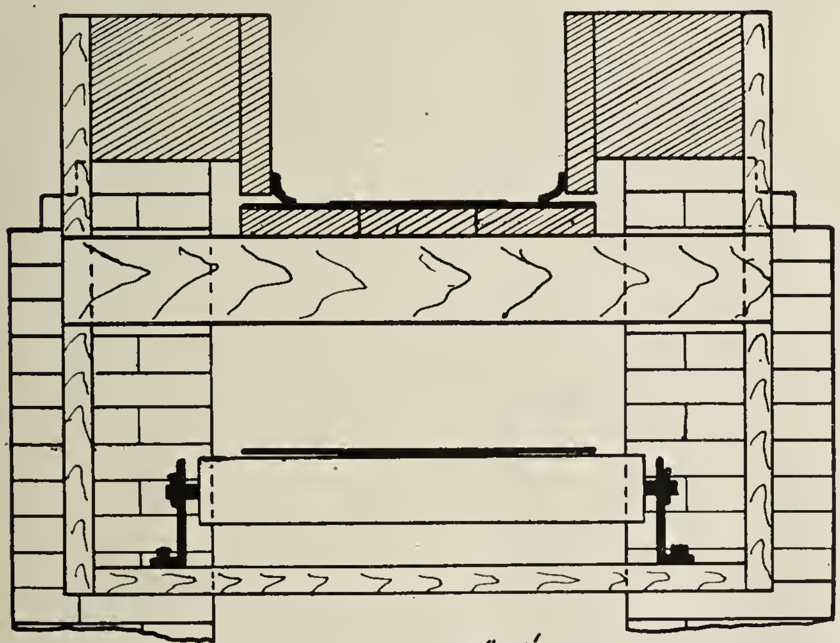


Figure 1.—Cross Section of Conveyor Belt Which Slides Over Solid Bottom or Trough

The nature and location of deposits and weather conditions governs the amount of water which the clay contains in its raw state. The method of winning has considerable effect upon the size of the clay particles. Both the water content and the size of the clay lump has considerable bearing upon the clay preparation.

Some clays require weathering before they can be used with any degree of success. Others can be used without weathering. However, manufacturers are finding that the effects of weathering or standing in a storage pile for a short time will eliminate much die trouble and increase production. Weathered clay breaks up faster in the dry pan, pugs easier and flows thru a die not only with more speed, but in more perfect shape.

By feeding the raw material directly into a chute or hopper of the grinding apparatus as it comes from the mine or quarry, much time and equipment is eliminated. However, experience has shown that weathering and preliminary grinding often improves the product, reduces repair costs and in the long run pays.

Storage practices may be divided into two general classes:

1. Where small reserves are held in readiness in case of breakdowns of winning machinery, transporting equipment or during a short stormy period when material cannot be gathered.

2. The storage of large tonnages in order to maintain a supply of dry clay during rainy seasons or cold weather when the bank or pit is in an unworkable condition or the clay unfit for manufacturing purposes.

Types of Clay Conveyors

Moving the clay from the storage shed to the pan is mostly done by belt conveyors. There are several types of conveyors available which will handle raw clays in an entirely satisfactory manner. However, there are certain operating conditions that must not be overlooked. The belt conveyor operating over rolls is extensively used. Ordinary care is needed in loading the belt or either the belt or rolls may be injured. Especially if the material occurs in large lumps and sharp corners, the life of the belt and rolls will be shortened.

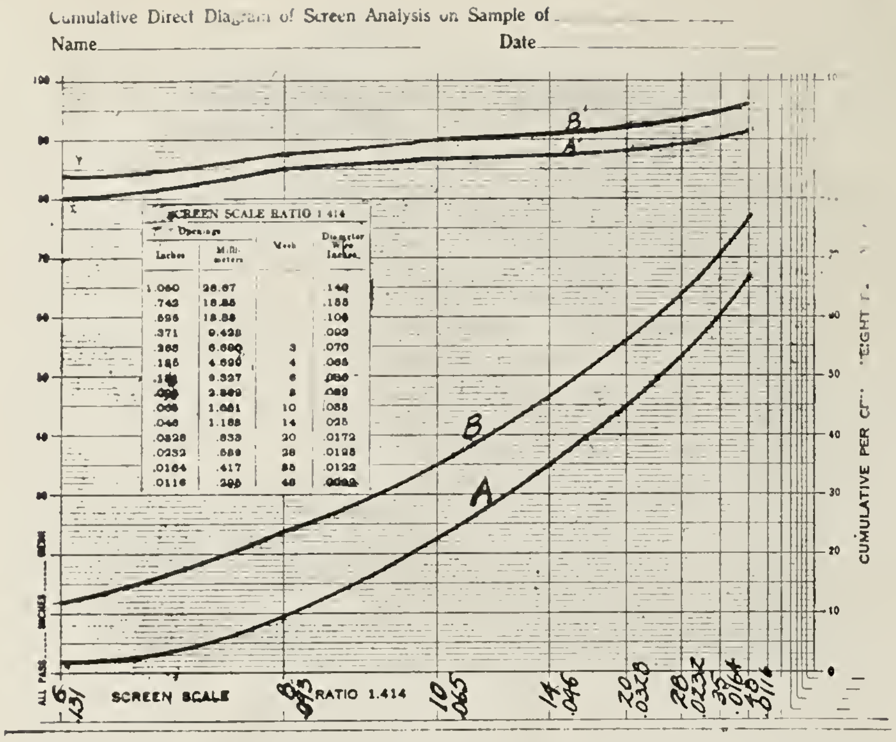
A belt sliding over a solid bottom or in a trough, as shown in Figure 1, has proven to be very satisfactory for transporting clay from a bin or storage shed to the dry pans. Unless such a belt is properly constructed and made of stable material, trouble may be expected, resulting in fast destruction of the belt and frequent shut downs to clean the clay from under the belt.

Drag Line Conveyors

Oak planks make an ideal material for the belt to slide on as this wood takes a polish readily, thereby reducing the friction. A conveyor constructed as shown in Fig. 1 will keep all clay on the belt and can be operated continuously without clogging or extra expense to keep it operating.

Drag line conveyors are simple and effective for recovering storage clays. Repairs to this equipment are comparatively easy to make and can be made quickly and cheaply. Altho drag line conveyors are not as common in recovering storage clay as belt conveyors, they are well adapted to some conditions.

The manner in which clays are sized depends upon the nature of their physical properties. Soft dry glacial clays and many sedimentary deposits have little strength to resist grinding and consequently break down very rapidly in dry pans. Some clays are passed thru roll crushers or disintegrated previous to screening and molding, while others require a preliminary crushing before being fed into the dry



The Charts, Figures 2 to 5, Are Screen Analyses. On the Horizontal Axis Are Found Divisions Denoting the Size of Screen and the Mesh Equivalent in Square Inches. The Vertical Axis Is Divided into Ten Parts, Each Division Being Equal to Ten Per Cent. For Example, if One Wishes to Obtain the Per Cent. of Material That Is Retained on a Ten Mesh Screen on the Charts, First Look Along the Horizontal Axis Until You See the Figure 10, Then Travel Vertically Along This Line Until You Reach the Point Where the Curve Intersects This Line. This Point Shows, by the Figures on the Vertical Axis, the Amount of Material Retained on the Ten Mesh Screen

pan. Occasionally special equipment is required for handling wet clays.

Wet and Frozen Clays Troublesome

In the northern States and Canada, where low temperatures are experienced during the winter months, much trouble is encountered because of wet and frozen clays. These clays gum up the screen plates and freeze on them. In this way, they wear out the scraper shoes, especially near the pan rim, and allow the clay to build over the end of the screens and on the bottom of the rim. The scrapers under the pan need especial attention if kept in condition to keep the clay from building up around the under side of the pan rim and causing much unnecessary friction. Large frozen pieces of clay often jump out of the pan or skid under the mullers. Weathering has a marked effect upon the crushing properties of most hard and tough clays. These clays often crumble and grind easily after exposure to the atmosphere for even a few days. A comparison of the breaking down properties with regard to the ultimate fineness of a weathered and nonweathered indurated fire clay is shown in Fig. 2.

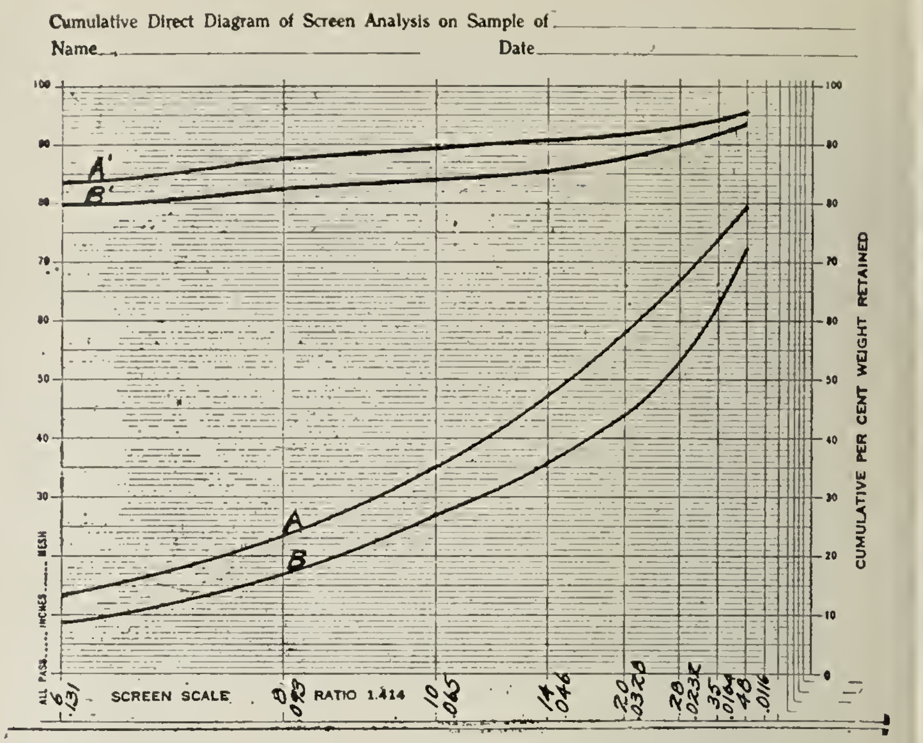


Figure 3.—See Caption Under Figure 2

Results of Grinding with Different Weight Mullers

Both samples were of the same clay. One sample was taken of the clay which came direct from the mines after it was ground—the other sample was taken after some of the same type of clay had been weathered and then crushed. Both clays were ground in the same pan and screened thru the same screen with mullers weighing 10,600 pounds. Curve "A" represents the weathered sample and curve "B" represents the nonweathered sample. The weathered clay ground about two tons per hours faster than the clay direct from the mine. Curve "A" and "B" show desirable fines in tailings. The clay was screened over an inclined wire cloth screen.

The effect of the weight of the grinding mullers on the ultimate fineness of the clay is shown in Fig. 3. Two dry pans of the same make and size operated under similar conditions and grinding a similar shale were equipped with mullers of the same width of face but of different weights. Curve "A" shows the degree of fineness of the material which was ground in the pan with the heavier muller—10,600 pounds. Curve "B" shows the same result for the dry pan having a lighter muller—8,600 pounds. Curve "A'" and "B'" show desirable fines in tailing: The ground product was screened over an eight-foot piano wire screen.

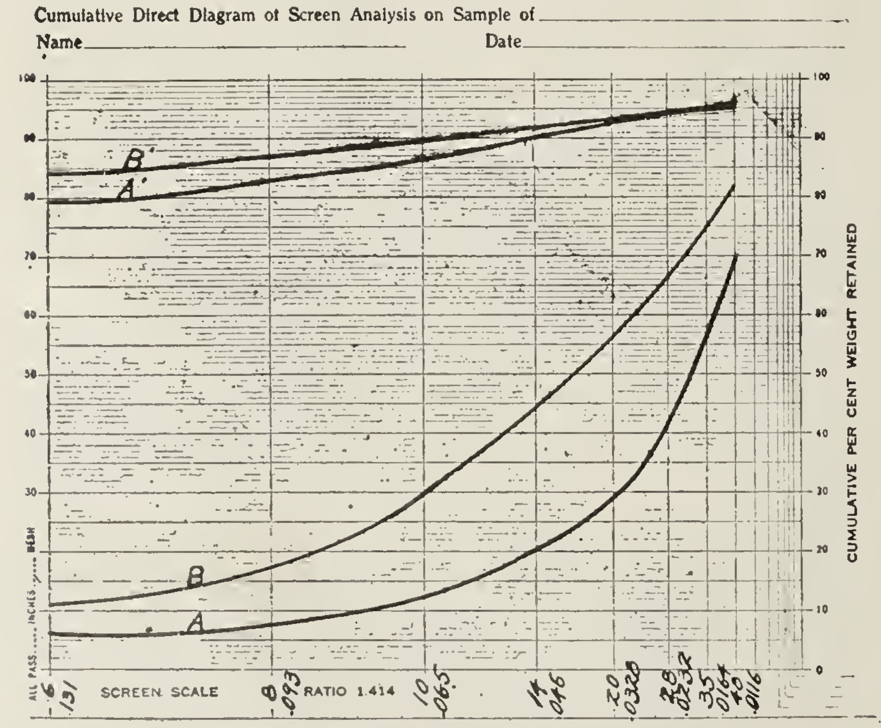


Figure 4.—See Caption Under Figure 2

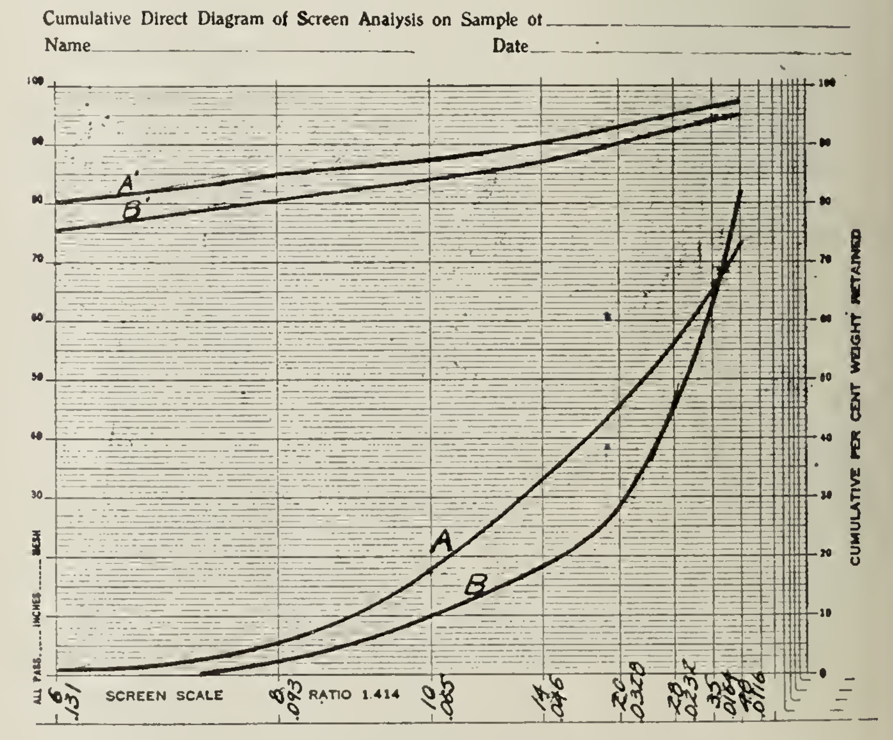
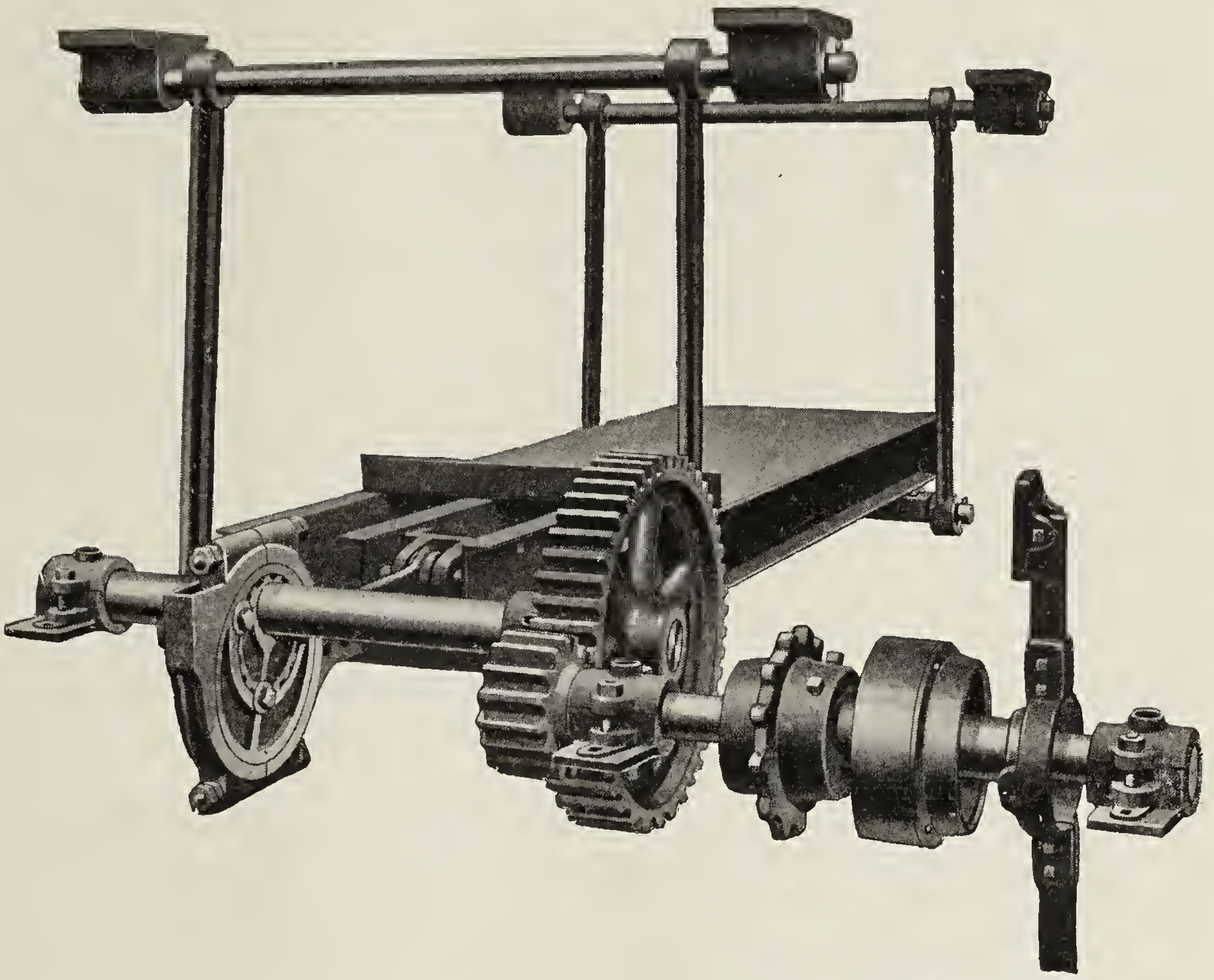


Figure 5.—See Caption Under Figure 2

Fire Clay Screen Analysis

Fig. 4, Curve "A" shows a screen analysis of a soft number two fire clay (weathered) that was ground in a nine foot dry pan equipped with mullers having a 12 inch face and weighing 4,300 pounds each—the dry pan had one-fourth inch screen plate openings. The clay was screened from each results of a screen analysis of the same deposit of clay ground thru a pan equipped with mullers weighing 5,300 pounds each and with 12 inch face. This clay is used in the manufacture of dry pressed face brick.

A screen analysis of a soft sedimentary clay is shown in Fig. 5, Curve "A." This clay is only passed thru a roll crusher previous to pugging and is used in the manufacture of a good grade of rough texture face brick. Curve "B" shows the analysis of a hard shale which was ground thru dry pans. Curves "A' " and "B' " show desirable fines in tailings. Both clays were screened thru perforated steel screens.



Reciprocating Feeder Which Can Be Used to Feed Shale Into the Dry Pan

Value of Preliminary Preparation

There are many deposits of clay which are used for the manufacture of common building brick that may be used without any grinding. However, few high grade clays can be used without preliminary preparation. The size of the clay particles and the proportion of fine material to coarse material in the mix that is used for molding of brick or tile is seldom considered of very much importance. Yet the size of these particles have a direct bearing upon the plasticity, pugging, molding properties (in the die), drying, burning, and the quality of ware produced. In the dry process of manufacture, the quality of ware and the speed of the presses depends a great deal upon the size and condition of the clay particles entering into the mold. The tonnage of clay that can be ground per hour depends not only upon the physical state of the clay, but also upon the selection of the machinery used in grinding it and upon its care and condition. When production is repeatedly held up for lack of clay, an analysis should be made of the clay and of the grinding apparatus. The following outline may help in locating the trouble:

- **Condition of Clay**
  - Size of clay lumps
  - Frozen or dry
  - Resistance to grinding
- **Operation and Construction of Pan**
  - Feeding too slow or too fast
  - Diameter of pan
  - Size of openings in screen
  - Total screening area
  - Speed of pan, r.p.m.
  - Width of grinding faces of mullers
  - Weight of mullers
  - Position of scrapers
  - Condition of grinding plates and muller faces
- **Mechanical Defects**
  - Clutch slipping
  - Belt slipping
  - Broken screens
  - Scrapers under pan worn out
  - Trouble at step of pan
  - Clogged screens returning clay to pan

Condition of Clay

If the dry pan is to grind a maximum tonnage of raw material, it must be uniformly fed at all times, not built up and then allowed to run empty before refilling. A reliable pan feeder is of more value than is often considered. Theoretically, the greater the speed, the wider and heavier the mullers and the greater the screening area of the dry pan, the greater will be the tonnage ground. This works out in practice to a great extent.

Increased Speed Means More Capacity

Two dry pans of the same make and size, running at the same speed, and grinding the same clay, but equipped with mullers of different weight, altho of the same width of face, had an average difference in capacity of about two tons per hour. An increase of speed of six r.p.m. increased the grinding capacity of a pan 1½ tons per hour.

A dry pan running at a rate of over 30 r.p.m. has a tendency to throw clay over the rim and also to break off the scrapers, if large lumps are fed into it, unless the scrapers are set to have a long sweep from pan rim to mullers, which gives the clay no abrupt change of direction, but delivers it to the inside of the muller tire.

Considerable attention should be given to the distance of the scraper from the screen as the latter should be cleaned as it passes under the scraper. Auxiliary scrapers usually increase the grinding capacity and should preferably be held rigidly in place at the pan rim. Scraper shoes of even the best steel wear rapidly, thus it should be arranged so that these parts are easily accessible and quickly changed.

Worn Tires Reduce Capacity

Worn tires on mullers and grinding plates are one frequent cause for low capacity from a dry pan. The shafts may wear, giving the mullers a slight inclination and causing the wearing of the grinding plates at the points of greatest pressure. Also, the manner in which the clay is fed under the mullers has an important bearing on the even or uneven grinding of the surface. If the mullers are (if possible) reversed when the first signs of uneven wear are noticed, much subsequent trouble can be eliminated.

By passing a clay thru a roll or jaw crusher previous to grinding in a dry pan, the large hard pieces will be reduced in size. This will relieve the pan of much heavy work and in most cases where indurated clays are used, materially increases the tonnage ground. Whenever large lumps of hard clay are fed direct to the dry pan, the undue wear and misuse sooner or later culminates in frequent breakdowns and heavy repair bills, unless the pans were designed and built for heavy duty. To prevent the pan from breaking itself to pieces, under such cases, the speed is often reduced. This, however, means a reduction in the amount of material ground.

What to Do with Wet Clay

If the clay is too wet, little if any will pass thru the screens. Many methods are used to overcome this difficulty. The clay may be stored so that enough dry clay to last thru the wet season is available. Dry clay from the storage shed may be mixed with the wet clay. By using bats and spoiled ware returned to the pan together with wet clay, it is often possible to make the wet clay available for grinding. However, there is seldom enough of either to last for any length of time. Moreover, by drying clay in an artificial dryer, it is often possible to make use of wet clay. Some storage system is the best solution of this condition for the average plant.

Much unnecessary expense is incurred by many plants by feeding the clay into the dry pans by hand. The pan is seldom uniformly supplied with clay and often it is either operated so full that the scrapers are throwing clay over the rim or the pan is operating nearly empty. In either case the capacity of the pan is greatly reduced. A mechanical feeding apparatus assures uniform feed and maximum pan capacity. These feeders are comparatively cheap and seldom in need of repairs.

The value of systematic clay handling and preparation is well appreciated by one firm in particular who grinds three different types of clay aggregating approximately 350 tons per day with four men.

A. S. T. M. TENTATIVE STANDARDS PRINTED

The 1923 edition of the American Society for Testing Materials' book on Tentative Standards has just come off the press. This book comprises 859 pages and contains 170 tentative standards, which includes 26 standards relating to cement, lime, gypsum and clay products and 33 standards relating to road materials. This volume is available at the price of $7 in paper and $8 in cloth binding and may be secured by applying to C. L. Warwick, secretary-treasurer of the American Society for Testing Materials, Engineers' Club Building, 1315 Spruce St., Philadelphia, Pa.

WILL BUILD $20,000 MACHINE SHOP

Donnelly Brick Co., Berlin, Conn., plans to erect a one-story brick, 60x160 foot power house and machine shop to cost $20,000.

New British Process Reduces Cost of Brick Making Over 50%

By Our London Representative

BRICK AND TILE manufacturers here are showing great interest in the new brick-making process which is having a try-out in this country and which, it is asserted, will revolutionize the brick and tile making industry since the process abolishes the need of much labor, increases the rate of production and decreases production costs to some considerable extent.

The process, briefly, consists in the thoro disintegration and drying of the particles of the material as a first operation. The saving of time is obvious since after 15 minutes the dried and finely granulated clay passes to a moistening device wherein a complete stirring, without compression, combined with a projection of fine particles of water, converts the dried clay into a pulverized mass which is perfectly and regularly moistened to the exact degree required.

Brick Are Dry Pressed

The substance then is led into hydraulic presses and, emerges a molded brick or series of brick. Placed edgewise one of these brick will support the weight of two men standing upon it. It is then only necessary to burn immediately, 80 per cent. being suitable for facing brick. As regards production details of this process one series of machinery will produce from 3,500 to 4,800 brick an hour. Compared with the old-fashioned wet process the labor needed is as 7 : 22. The comparison of the approximate cost per thousand brick is as 12 : 21. The finished brick has 50 per cent. more resistance to pressure, frost and chipping.

Better Quality Brick

Brick and tile made under the new process are thus of superior quality altho made at a cheaper rate with considerably less labor and a decided saving in time. It is upon this last consideration that the building trade here places so much importance since the time factor in the long-overdue and anticipated revival in building here has been, so far, one of the greatest handicaps to its development. Inquiries already are being received from brick and tile manufacturers regarding the new process and the holders of the process rights in this country are anticipating much business.

The new process, it is claimed, combined with the new bricklaying machines which have been tested successfully in Scottish building operations, bids fair to speed up the brick and tile manufacturing industry and the national building campaign to a point not even dreamed of six months ago.

TO ASK FOR TARIFF ON BRICK

A meeting has been called in Cleveland for November 15, by Charles H. Bryan, president of the Common Brick Manufacturers' Association, for the purpose of discussing the promotion of a tariff on brick, to protect American manufacturers from wholesale importation of that product from Europe. To this end Mr. Bryan has appointed a committee composed of men who are vitally interested in the question. The members of this committee are:

Wm. Cary, Albany, N. Y.; Dr. J. M. Purcell, Mechanicsville, N. Y.; Wright D. Goss, New York City; John T. Washburn, Saugerties, N. Y.; George A. Parry, Boston, Mass.; R. O. Clark, East Berlin, Conn.; D. E. Andrews, North Haven, Conn.; J. A. Pugh, Norfolk, Va.; W. E. Dunwody, Macon, Ga.; Fred W. Salmen, New Orleans, La.; Warren Griffiss, Baltimore, Md.; Frank Gery, Reading, Pa.; Wm. Schlake, Chicago, Ill.; E. S. Barkwill, Cleveland, Ohio.

The association has made an extensive investigation into the subject of foreign brick manufacture and will have a great deal of data to present before the committee.

Capital for the Clay Industry

Part 2

Telling How to Secure Capital for the Expansion of a Clay Plant Which Has Been Operating Successfully

Joseph K. Moore

Consulting Engineer, New York City

CAPITAL for the expansion of a plant already in a successful stage of operation is usually obtained directly from Industrial Banking Houses. Whether the money is to be procured from bankers or individuals, the same care should be taken in the preparation of the documents to be submitted.

These sources from which Capital for expansion can be obtained are greater than that for new projects or for development purposes. While the field is larger, the class of investor in this type of security is also more critical. Capital for extensions and improvements comes from the investing class and not from the speculative class. The investing class demands greater security but is satisfied with smaller returns. Where the investigation shows great safety and the return of the original capital is amply protected, the cost of the money to the industrialist is measurably decreased.

Financing the expansion of a clay plant is not as simple an operation as might be supposed. Practically everything depends upon the manner in which the proposition is placed before the capitalist. You might have a good proposition and yet fail to get money to back it because you did not present your case in its strongest light. It is important, therefore, to know what capital requires.

Mr. Moore here tells what must be done in order to interest the man with the money.

It is difficult to draw a clean line of demarcation between speculative securities and investment securities. It is somewhat a case of temperament. By the very cautious only those securities accepted for savings bank reserves are considered investment securities, while the person who is speculative in his tendencies places good industrial preferred stock and even the common stocks of sound Going Concerns in the investment class.

The greater the protection that can be placed around a security, the easier it is to obtain money. The average Industrial Security possesses many speculative features, because of the many unavoidable hazards in every manufacturing business. The average manufacturer is actually engaged in several kinds of business. He not only must know how to make his product, but he must be a keen merchandiser as well. The problems of purchase, manufacturing, selling and even banking are his. His money is tied up not only in finished goods which are marketable, but also in raw material which does not have a definite sales value, and goods in state of manufacture to which labor must be added to make the product saleable. People lending money consider all of these items.

Present Case Properly

The problem of the industrialist is first of all to obtain the necessary money, and secondly to obtain that money at the least cost. Success in each of these endeavors depends very largely on the proper presentation of the case. To prepare the case properly it is necessary for the engineer to work in cooperation with both accountants and lawyers.

If the manufacturer goes direct to the Banking House without substantiated proofs of his claims, the Banking House if interested at all will make the necessary investigations for which the manufacturer is ultimately charged not only the actual cost but also a profit on the work. This may be denied but it will in fact be an element in the cost of the money. Bankers do not work without remuneration.

It is preferable to obtain an engineer who has had sufficient experience to be capable of directing and reporting on the whole investigation, the report of the accountants and lawyers being a part of and included in his report, his final deductions and recommendations therefore containing the total findings. As the writer has found this to be the most satisfactory procedure, the investigation will be outlined on this basis.

Preparing a Statement

It is impossible to form an outline to meet all conditions but in order to show the general steps necessary and to indicate and anticipate some of the questions which must be answered, the following is submitted.

A. Letter of submittal.
B. Index.
C. Summary of conclusions.
D. Company, name, location, and so forth.
E. History of Company.
    E-1. Original incorporation, date, where made, by whom, purpose, deviation.
    E-2. Amount of capitalization.
        E-2a. Kinds of stock, amount.
        E-2b. Bonds, amount.
    E-3. Changes of incorporation.
    E-4. Investigation of rights under incorporation.
    E-5. Investigation of limiting clauses.
    E-6. Investigation of by-laws.
F. History of Management.
    F-1. Changes.
    F-2. Policies.
        F-2a. Regarding purchase.
        F-2b. Regarding selling.
        F-2c. Regarding labor.
        F-2d. Success.

- G. Legal Investigation.
  - G-1. Examination of titles.
  - G-2. Examination of liabilities.
    - G-2a. Tax.
    - G-2b. Corporate.
  - G-3. Patents.
- H. Accountants Examination.
  - H-1. History of earnings.
  - H-2. History of costs.
  - H-3. Examination of inventories.
    - H-3a. Raw.
    - H-3b. In process.
    - H-3c. Finished.
  - H-4. Examination of receivables.
    - H-4a. In detail giving age and liability.
  - H-5. Examination of payables.
  - H-6. Bank accounts and cash.
  - H-7. Balance sheets.
  - H-8. Profit and loss statements.
  - H-9. Monthly cash requirements over yearly period.
  - H-10. Credit history.
  - H-11. Graphical illustration of profit or loss by months over three year period by years as far as record is obtainable.
  - H-12. Reserves.
  - H-13. Depletions.
  - H-14. Depreciations.
- I. Physical examination and appraisal.
  - I-1. Real Estate.
    - I-1a. Surface value, amount.
  - I-2. Mineral.
    - I-2a. Clay, value, quantity, duration of supply.
    - I-2b. Coal, value, quantity, duration of supply.
  - I-3. Timber.
    - I-3a. Quantity.
    - I-3b. Value.
    - I-3c. Life.
  - I-4. Buildings and structures.
    - I-4a. Names.
    - I-4b. Size.
    - I-4c. Kind of construction.
    - I-4d. Adaptability.
    - I-4e. When built.
    - I-4f. State of preservation.
    - I-4g. Value.
  - I-5. Building equipment.
    - I-5a. Kind.
    - I-5b. Adaptability.
    - I-5c. Value.
  - I-6. Machinery and equipment.
    - I-6a. Kind.
    - I-6b. Adaptability.
    - I-6c. Obsolescence.
    - I-6d. Arrangement.
    - I-6e. Value installed.
  - I-7. Inventories (physical) at cost.
    - I-7a. Raw.
    - I-7b. Stocks.
      - I-7b1. Compound } quality.
        quantity.
      - I-7b2. Finished } value.
  - I-8. Livestock (value and description).
  - I-9. Mines (value).

(See Article I, Brick and Clay Record, October 16, 1923.)

- J. Industrial Survey.
  - J-1. Management.
  - J-2. Organization.
  - J-3. Procurement.
    - J-3a. Location.
    - J-3b. Policy.
    - J-3c. Requirements.
  - J-4. Manufacturing.
    - J-4a. Location.
    - J-4b. Layout.
    - J-4c. Routing and handling.
    - J-4d. Comparison with competitors.
    - J-4e. Labor.
    - J-4f. Sanitation.
    - J-4g. Housing.
    - J-4h. Welfare.
  - J-5. Insurance.
    - J-5a. Fire.
    - J-5b. Casualty.
    - J-5c. Boiler.
    - J-5d. Flywheel.
    - J-5e. Life.
    - J-5f. Use and occupancy.
  - J-6. Distribution.
    - J-6a. Markets.
    - J-6b. Freight rates.
    - J-6c. Cars.
    - J-6d. Railroads.
    - J-6e. Competition.
    - J-6f. Market trends.
    - J-6g. Business cycles.
    - J-6h. Location.
    - J-6i. Advertising.
- K. Financing Information.
  - K-1. Amount needed.
  - K-2. Time needed.
  - K-3. Business hazards and other liabilities.
  - K-4. History earnings.
  - K-5. Rate of amortizing loan.
  - K-6. History of industry.
  - K-7. Competition.
  - K-8. Position of company in industry.
  - K-9. Purpose for which money is to be used.
  - K-10. Anticipated earning increase due to use of money.
  - K-11. Rate money is required.
  - K-12. Construction program.
    - K-12a. Plans.
    - K-12b. Costs.
  - K-13. Changes of management.
- L. Exhibits.
  - L-1. Maps.
  - L-2. Letters; attorney, auditors, sales.
  - L-3. Photographs.
  - L-4. Graphical illustration.
  - L-5. Summary of audits.
  - L-6. Legal opinions.

Summary of Conclusions

Following the outline some of the points must necessarily be expanded. The summary of conclusions or the salient points of the investigation should be presented, both good and bad. In order to indicate some of these points the following skeleton might be suggested.

1. The company has been in operation......years during which time it has had a steady growth.
2. Its position in the field of its activity is......
3. Its product is......
4. There is a sufficient market to take care of its expanded output.
5. Its management is high grade and experienced. The company's success up to the present time has been due to the present management (or otherwise).
6. Its organization is established and the company has a reputation for paying employes well and the personnel of the organization is energetic and satisfied.
7. The labor turnover is........
8. It is union or non-union.
9. It has or has not been troubled with strikes.
10. The company desires to increase its output and for this purpose has authorized the following construction......
11. The estimated cost of the work is......
12. The estimated increased working capital is......
13. In order to raise this money the company desires......
14. This money is to be used as follows......
15. At present the company's total worth is......
16. Its fixed assets are......
17. The relationship between the quick assets and the quick liabilities are more than two to one.
18. The relationship between the accounts receivable and the inventories is........
19. The value of its inventories is........
20. Of this amount it is estimated that........
21. The earnings for the last five years have been........
22. The earnings show that after paying all taxes, divi-

dends on all stock at......return, there will remain...... amount to be set aside for amortizing this loan.

23. It is estimated that the life of property is......
24. The mines have a sufficient life to furnish raw material for......years.
25. The appraised value of the property on a basis of reconstruction value is......
26. A fair going value of the property is......
27. Its depreciated value is 2½ times the amount of the proposed mortgage.
28. The accountancy has been handled......
29. All titles as examined by the attorneys are......
30. The manufacturing cost as compared with its competitors is......
31. The future outlook for the business is......
32. The business hazards of the industry are......
33. The fire hazards are......
34. The sales organization is......
35. The future of the industry is estimated to be......

After the investigation and report has been made it must be decided how the capital is to be raised. If the money is procured thru investment bankers, under present conditions it would probably be found that the cheapest money could be obtained thru the sale of first mortgage bonds.

How Financing Is Arranged

Seven per cent. first mortgage ten year bonds would probably be determined upon. If these were underwritten by a responsible house they could probably be sold to the public at a price of 97, par value 100, provided the security and earnings were of sufficient amount to be attractive to the banking house. These bonds would probably net the industrialist 90. A few years ago preferred stocks were popular and some are still being sold. However, in the selling of preferred stock thru banking houses, it is the usual practice to give a bonus of common stock with the preferred. This means that the banker or his client becomes a partner in the business. It is not always desirable from the standpoint of the industrialist since it always means some curtailment of his control.

Prospectus

If the issue is large and the banker assumes the total responsibility for the issue, it is probable that he will demand representation on the board of the company during the period the mortgage is operative.

If the loan is made by a banking house the prospectus is written by them from the data supplied by the engineer's investigation. Since the securities must be sold by the banking house, the banker usually desires to write this prospectus himself. If, however, the industrialist decides to obtain his money directly from the public, then it is necessary to have a prospectus written by an outside party from data submitted in the engineer's report. The prospectus has been considered in the first article of this series and basic principles are the same. The most important factor in the prospectus is the financial plan. Since the financial plan must be adapted to the particular time and style of financing in demand and also must be fitted to the condition, the outlining of various financial plans is a rather complicated problem and has not been considered within the province of these articles.

(Part 3 of this series will follow soon)

* * *

BUILDING GAINS 25 PER CENT.

October construction showed a surprising increase, according to F. W. Dodge Corporation. Total contracts awarded during the month in the 36 Eastern States amounted to $360,697,000. The increase over September was 25 per cent, whereas the normal season increase is 7 per cent. In 27 of these states the increase over October of last year was 26 per cent.

The large October increase was heaviest in New York State and Northern New Jersey, and in the residential class. Apparently the fact that building costs have declined only slightly is not acting as a very strong deterrent on building operations. The October increase, coming after a steady decline since spring, is to be viewed from two angles. A fairly heavy construction volume, keeping the industry busy thruout the winter, is desirable. If the October record is a forerunner of abnormally high construction figures for the rest of this year and up to the opening of the next spring season, there is danger of a more severe reaction next year than there was six months ago.

Included in last month's record were the following important items: $173,042,000, or 48 per cent. of the total, for residential buildings; $63,499,000, or 18 per cent., for public works and utilities; $35,133,000, or 10 per cent., for business buildings; $32,721,000 for industrial buildings; and $26,085,000, or 7 per cent., for educational buildings.

The total amount of construction started during the first ten months of this year has amounted to $2,847,787,000, an increase of 2 per cent. over the corresponding period of last year.

Contemplated new work reported in October amounted to $556,491,000, an increase of 43 per cent over the September figure.

* * *

COMPARATIVE COSTS OF BRICK AND FRAME

The table here printed is one of several which have been prepared by the American Face Brick Association for the purpose of showing by means of figures actually obtained from builders, the difference in the cost of various types of wall construction. A glance at the table, comparing the differences in costs in various cities will show that there is an unaccountably wide variance between the prices quoted.

FOUR-ROOM BUNGALOW

Percentage Differences on Six Types of Wall Construction

	Frame Construction		Face Brick Veneer Construction		All Masonry Construction	
	Siding on Frame $	Stucco on Frame %	On Gypsum Sheathing %	On Wood Sheathing %	Face Brick On Hollow Tile %	Face Brick on Common %
Atlanta	6,390.87	—3.41	—1.99	0.65	13.39	4.76
Boston	6,486.49	.043	9.36	9.32	10.95	8.05
Buffalo	5,621.31	3.87	....	14.63	16.00	18.02
Chicago	5,970.65	—0.03	2.40	2.15	1.87	3.96
	5,378.21	—0.52	9.28	10.21	9.46	10.69
Cleveland	8,462.05	1.76	6.50	5.76	5.25	7.16
	7,310.10	1.24	11.60	11.44	12.57	13.55
Indianapolis	5,814.36	3.75	11.90	13.45	14.36	15.60
Kansas City	5,431.54	—4.18	7.31	9.35	11.74	12.65
Los Angeles	5,780,00	1.74	16.40	17.64	16.40	17.14
	5,606.75	1.99	14.64	17.40	14.89	15.53
Philadelphia	5,473.70	0.18	5.56	5.75	8.49	5.43
	7,174.77	—1.20	5.31	5.09	9.12	5.02
Salt Lake City	4,642.46	—4.66	3.21	3.78	3.09	4.19
Seattle	7,097.90	—4.76	5.91	6.29	9.78	9.04
	5,832.48	—0.69	9.38	9.70	13.38	13.28
St. Louis	6,095.14	4.15	9.43	9.97	10.85	11.81
	5,715.85	—1.43	5.28	5.46	6.33	5.32
Washington	9,016.74	—2.23	8.21	4.03	12.47	5.65
Averages	**6,279.02**	**—0.43**	**7.36**	**8.53**	**10.55**	**9.83**

* * *

COMMON BRICK DOLLAR WORTH 46c

52 cents' worth of building material can be bought in 1923 with the dollar of 1913. If invested in lumber it will buy 47 cents' worth, in structural steel 60 cents' worth, in common brick 46 cents' worth, and in other building materials 58 cents' worth on a basis of the average 1913 price. Only 33 cents' worth of these materials could be bought by the same dollar in 1920. These are figures just issued by the United States Bureau of Labor Statistics.

How Good Silica Brick Are Made

Part 3

Dealing Principally with Inspection of Green Brick and Drying the Ware

E. E. Ayars

Chairman, Refractories Division, American Ceramic Society

GREEN BRICK INSPECTION is perhaps the most particular task in the manufacture of silica brick. A thoroly competent inspection foreman is in a better position to spot troubles than men in charge of other parts of the molding operation, as he sees in the brick the results of several efforts, and will often recognize the source of the trouble at once. The inspector devises new ways of handling various molding problems and is a good critic of molds and pallets as well as brick.

Green brick inspection is more important than inspection of the finished product, as it eliminates the cost of further processing defective ware. It aids the molder by instruction in methods, increases the output and decreases the unit cost, hastens delivery of the correct standard materials and protects both the producer and customer in the matter of quality and workmanship.

Types of Poorly Molded Brick

Inspection starts when a new mold is put on the floor. The mold man checks all measurements of the mold carefully by the blue print and verifies the brand with the make-up order. The molder makes a few brick and these are also checked by the blue print to make sure the mold is correct in every particular. If the brick do not check the mold is returned to the shop for correction. When the mold produces a perfect brick the foreman O.K.'s it and the molder proceeds. Inspection of the freshly molded brick consists in part of taking an occasional measurement with rule and calipers and putting a straight-edge on the various faces to make sure that the brick are true. Brick with spongy corners or spots in them are struck out, as are also brick damaged by careless stripping of the mold. Brick having tongues and grooves or thin projections are often damaged in stripping the mold and, however slight the crack may be, the brick is ruined. By keeping a close watch on the molders and striking out all such brick, the number of damaged brick set out on the floors may be reduced to a minimum. Fins on the corners and edges of brick often cause fire breakage and molds producing such brick should be sent to the shop for repair. Molders will invariably use all the rough or weak pallets that come to hand rather than lay them down. Brick set out on such pallets will be misshapen and should be struck out.

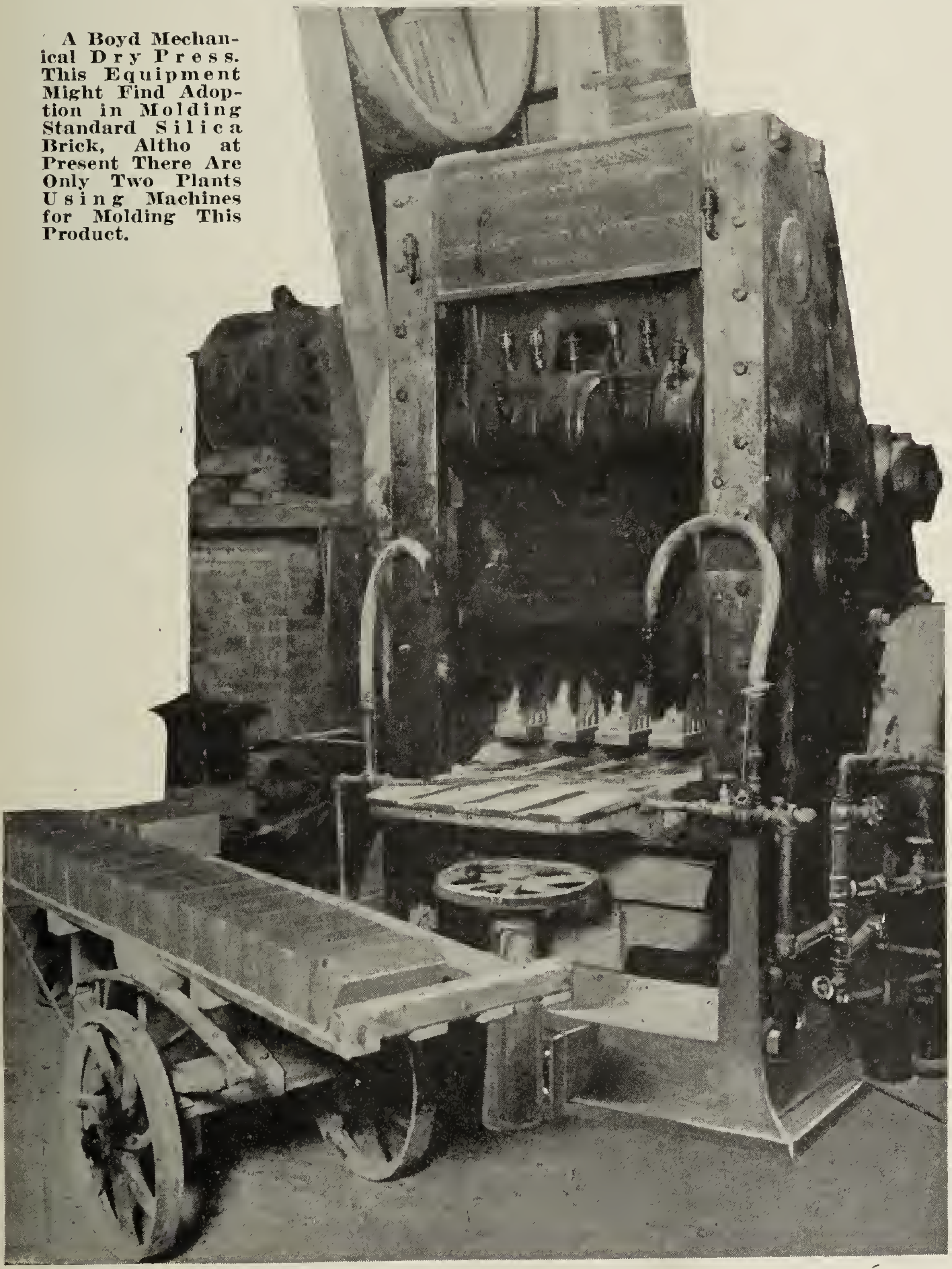
It is customary in running a new set of molds for the first time to set up the green brick in an assembly whenever possible to make sure that they fit properly, as errors sometimes creep into the drawings. This practice is followed with electric furnace roofs, gas retorts and setting blocks and occasionally with some sections of Coke Oven, particularly if it be of new design. A few pieces of each brick are made and allowed to dry so that they may be handled. On being set up errors in dimension or form are easily seen and may be rectified before placing the brick in production. It is truly remarkable what blue prints one may have submitted, especially by customers who are attempting to redesign gas machines under process of repair. Sometimes it appears that a knowledge of the fourth dimension is necessary to read them, and it is doubtful if anyone not thoroly familiar with the work could determine just what the drawings represented.

Thoro inspection of every special brick made is left to the floor hacker, a man of considerable experience, who looks each brick over carefully when he takes it from the pallet to hack it on the hot floor. The brick are dry enough to handle by the morning following the day of manufacture and they are hacked up on the floor to complete the drying and to release the pallets for the day's work. All imperfect brick are thrown out and the manufacturing record of the day before based on the number of good brick hacked.

A Hot Floor in a Refractories Plant Showing Large Shapes Being Dried

In making up an order for special brick a certain percentage is added to the number specified to take care of breakage. The allowance for breakage varies with the different brick.

The usual allowance for Ordinary brick is ten per cent., while with Difficult and Coke Oven an average breakage of from 15 to 20 per cent. may be expected. Many individual items in a job may run as high as 30 or 40 per cent., while others fall considerably below the average. In judging the amount of breakage to allow past experience is the best guide, and for new brick a comparison of its size and shape with brick previously manufactured will form a basis for figuring. On account of the many features entering into silica brick breakage estimates may turn out to be either high or low. In either case it generally means a loss of money. This is particularly true if the job is special. Breakage losses are constantly occurring even in the most unexpected places and for unexplained reasons, and there is probably more continuous grief in the manufacture of silica shapes than in any other ceramic process.



A Boyd Mechanical Dry Press. This Equipment Might Find Adoption in Molding Standard Silica Brick, Altho at Present There Are Only Two Plants Using Machines for Molding This Product.

Reasons for High Breakage

The very nature of the raw material, coupled with the lack of standard grinding, molding and drying treatment, and the fact that the inversion of quartz to the lower forms of silica, during burning, is accompanied by expansion, together with its natural sensitiveness to temperature changes, accounts for the high breakage experienced. It is very difficult in reviewing a breakage history to determine just what cause or combination of circumstances contributed to the loss, inasmuch as no scientific methods of control are used in the processes, and the reasons advanced are generally only a matter of conjecture.

One of the common causes of breakage is variation in molding density within the brick itself. This condition is often met in the work of careless or inexperienced molders, and may sometimes be noted in the green brick by casual inspection but more often is not detected. Brick of odd shape having thin sections combined with heavy sections are difficult even for the most experienced man to mold without a variation in density. Special shapes having tongues and grooves, or holes extending thru the brick invariably show greater density in the tongue or in the rim of the hole than in the mass of the brick. The matter of greater surface density plays its part also in breakage. Cracks are seldom seen in the slicked surface of silica brick unless they originate in some other part of the brick and are so extensive as to involve this surface. The reason may be seen in the fact that the upper surface of the brick does not come in contact with the resistance of the steel mold sides, and is of practically the same density as the interior mass of the brick.

Human Factor Cause of Irregularities

The tendency to irregular molding densities is a result of the human factor involved and on account of the molding method difficult to control. A purely mechanical method of molding would perhaps eliminate this undesirable feature altogether. It might be possible to get more uniformity by filling the mold by hand, hammering the mud into place and then inserting the mold in either a screw press or hydraulic press. The amount of pressure used would depend on the size and shape of the brick. Molds would require special design to stand the service, but it appears that in the case of brick of intricate design and varying cross-section such a method would prove advantageous.

The word breakage as applied to silica brick manufacture implies any and all kinds of losses occasioned by defective workmanship, materials or methods. Molds and drying equipment contribute to these losses to a great extent. A weak or poorly fitting mold that springs under the hammer blows is one source of fine cracks which open up in burning. Such brick do not ring when struck with the inspector's hammer and are thrown out, altho to all outside appearance they are good brick. Careless stripping of molds is a frequent source of damage, especially with irregular shape pieces. A slight pull or twist will strain such brick and, while the imperfection may not show up until the brick comes from the kiln, it becomes apparent under the hammer.

Weak pallets cause warpage and many times actually break brick in two from vibration as cars are moved to the dryer. Rack cars will drop or jump on uneven transfer car crossings and if the jar is heavy many brick may be broken even tho all the pallets are good.

Condition of equipment and lack of uniformity in molding methods contribute probably 30 to 40 per cent. of the total breakage. Constant vigilance on the part of inspectors and foreman is necessary to keep the equipment in proper shape and the molders' work up to standard.

Generally about 60 per cent. of the total breakage is so-called kiln breakage, altho much of this has its origin in molding or drying and is not easily identified after the brick is burned. Drying and burning breakage will be discussed later in connection with equipment and methods.

Foreign Processes

To return to the subject of mechanical methods of molding, the processes in use in some foreign countries should be considered. Economic conditions are responsible for many practices common in France and Germany. Industry in these countries has sacrificed some things for cheap manufacturing processes with all commodities, and refractories have not escaped this tendency. However, by research and the adoption of scientific control methods, the quality of silica refractories produced has not suffered. Very few silica brick are now made by hand in Germany. The rotary hydraulic press and screw presses are coming into wide use for the manufacture of all Standard, Ordinary and large proportion of special shape brick. Screw presses are used for shapes entirely and reasonable capacity is obtained, two brick being made at one operation. The capacity of hydraulic presses in this service varies from 600 to 2,500 Standard or Ordinary brick per hour. The working pressure of these presses is approximately 4,000 pounds per square inch, which is much in excess of the usual dry press pressures employed in this country. It would appear that in the enormous pressure employed with the hydraulic press the secret of success with the method lies. 1,500 pounds per square inch has been suggested as the minimum pressure which will produce a useable silica brick and the American toggle dry press is rarely capable of more than 1,000 pounds per square inch.

Dry Press Method Uncommon

Silica brick are not widely produced by the dry press method in this country, altho some brick are made in this manner. The production is mostly standard nine inch and sizes and some Ordinary shapes not larger than 18 inches.

The grinding method is essentially the same as in standard molding practice. After the batch has been ground it is conveyed to a dry floor, where a part of the moisture is evaporated and the mixture thoroly heated thru. The mud is then delivered to the dry press, which has an average daily capacity of approximately 15,000 nine inch equivalent.

Screen analysis of the brick mixture shows a larger percentage of coarse particles and also of very fine material than is found in regular brickmaking mud. The brick are burned to cone 17.

Results of Tests

Brick submitted to Standard tests showed the following results: Fusion Cone 31-32; apparent specific gravity 2.37; porosity 21.69 (which is much lower than found in brick of regular manufacture); modulus of rupture 709 lbs. per sq. in. (which is a good average); end cold crushing strength, 3,792 lbs. per sq. in.; permanent expansion on reheating to 1,500 deg. C. under a load of 25 lbs. per sq. in. 3.1 per cent. The high permanent expansion indicated that the brick had not received enough fire, and it was later reduced to within reasonable limits by increasing the burning time.

These brick are giving good service in a number of places and have a better reputation for uniformity than brick made by the slop mud or hammer turn methods.

Core of Large Glass Furnace Shape—14 in. x 14 in. x 13 in. This Core Was the Only Sound Part of the Brick When It Came from the Kiln. The Center Contained Moisture Which Cracked the Dry Shell on Being Heated. The Shell Broke Away When the Brick Was Taken from the Kiln

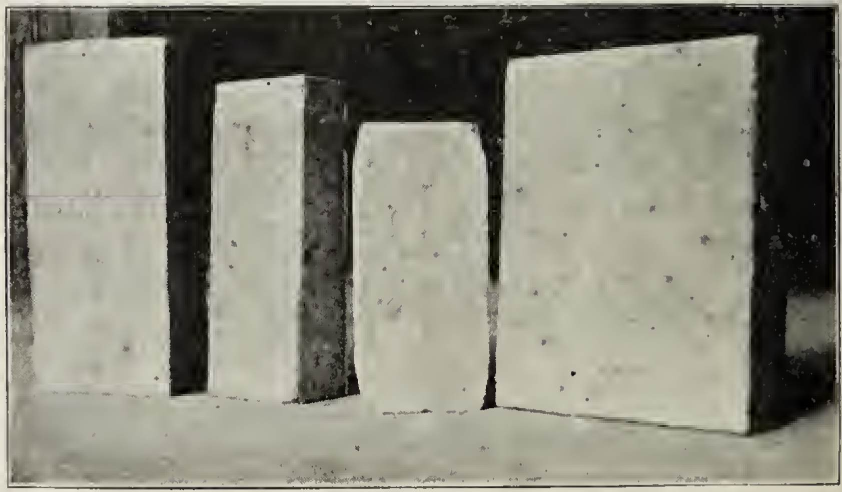
The development of machines for mechanical slop mud molding has gone ahead more slowly than would seem consistent with the needs of the industry. Several machines have been tried, all of which operated on the "drop" principle, but on account of various mechanical difficulties most of them have been abandoned. One machine has been perfected and is now in daily operation. The process is not entirely mechanical, the molder only having been replaced. It is necessary to strip the mold and put the pallet on the car by hand. This machine has a capacity of approximately 35,000 nine inch straights in 24 hours and is operated continuously in three shifts of eight hours each. The brick produced have been found by test to be much more uniform than the hand molded product and it appears only a matter of time when standard brick will be made by this method altogether.

Silica brick are dried either in a tunnel dryer or on a hot floor. All types of tunnel dryers are in use but the majority of plants use the waste heat system on account of the apparent saving of heat. On a plant running to capacity the waste heat system is satisfactory, but should the plant operate at reduced capacity the lack of heat at recurrent intervals is very annoying and costly.

Steam Dryers

Steam dryers of two kinds are in use. One is the common steam pipe tunnel dryer, while the other is in reality a large dry room having the same form and dimensions as a multiple tunnel dryer, except that the partitions are omitted. Both of these installations make satisfactory drying equipment and will not fail for lack of heat like the waste heat tunnel dryer.

Standard Nine Inch Brick Made in Open Slip Molds



Ordinary Brick Made in Vent Bottom Slip Molds

The temperatures carried on waste heat and steam tunnel dryers vary on different plants. Good drying results cannot be secured with temperatures below 200 deg. F., and much more rapid drying is possible at temperatures of 300 to 325 deg. F. The usual temperatures carried are from 300 to 325 degrees. Standard and some Ordinary brick are dried in 48 hours, at this temperature, while shapes require a proportionately longer time.

Operating the Dryer

Many plants make a practice of pulling several dry cars from each tunnel two or three times a day and replacing these by an equal number of cars of wet brick. As a result the efficiency of the dryer is considerably reduced. Plant operation should be so ordered that one car is pulled from each tunnel and a wet car inserted at regular intervals during the day.

Rapid drying at a temperature to 300 degrees or more is responsible for a large amount of breakage. Such losses do not develop until the brick are burned and at that time may be attributed to other causes on account of the difficulty of identifying the source of breakage in burned brick. Small cracks appear in the rapidly dried brick which open up in burning and the brick will not ring true under the hammer. Close examination of the brick as it comes from the dryer does not show these fine cracks, altho it has been proven that they are there.

Causes of Dryer Breakage

One manufacturer experienced an apparently high kiln breakage, but was unable to find anything unusual in his burning process. The theory of dryer breakage was advanced and a change in drying practice eliminated the high kiln breakage. The dryer had been operated at 300 deg. F. to secure maximum capacity. The temperature was reduced to 225 deg. F. and a regular schedule for drawing and entering cars established. The results obtained were remarkable and, altho the dryer capacity was somewhat reduced, the total manufacturing breakage was actually cut to 42 per cent. of the former figure.

Silica brick to all appearances does not present a very difficult drying problem, as rupture, common to clay brick which are dried too rapidly, is seldom seen, altho as stated above a large number of small cracks are formed. It would appear that brick left in the air until they had partially set from the lime mortar action and then introduced into a hot dryer tunnel would show a high breakage, on account of the necessity for steam generated in the interior of the brick to provide its own way of escape. Further it appears that breakage would be low in the case of brick entering the dryer at once upon molding, as no skin would be formed to hinder the escape of moisture in the brick.

Humidity Dryer

The principle of the controlled humidity dryer as seen in the "Proctor" dryer is being applied to the most difficult drying problems with eminent success.

In a private communication from the manufacturer of this dryer the following information is given:

Two leading refractories manufacturers of the United States are using these machines on silica brick with excellent results. One installation in Nova Scotia and one in England have been equally satisfactory. The drying time on standard nine inch brick is from 18 to 24 hours, a saving of a full day over the best standard practice with waste heat or steam tunnels. The drying time on shapes is also proportionately reduced.

Advantages of Humidity Dryer

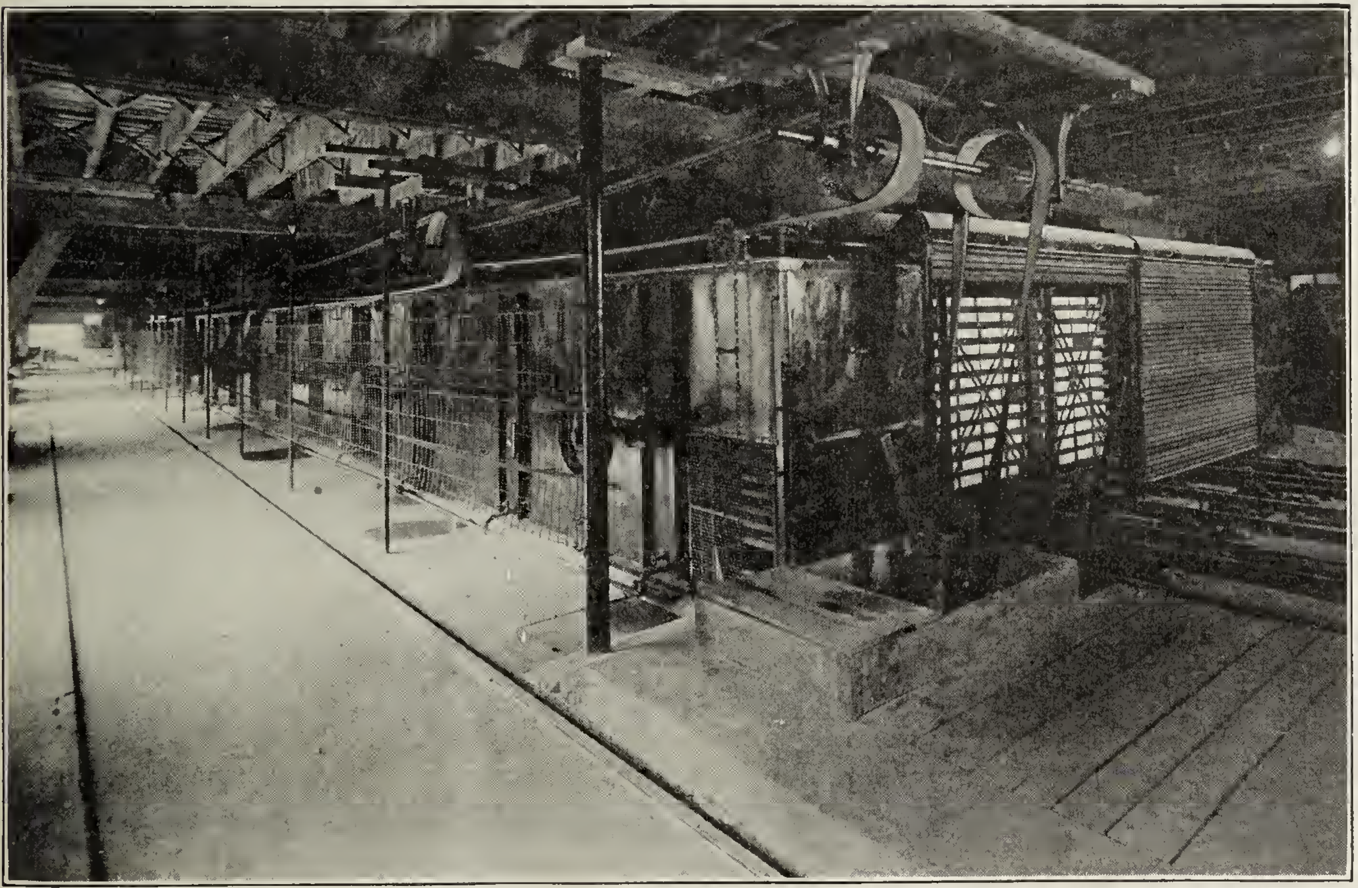
In addition to the advantages of rapid drying the working principle of the humidity dryer insures safe drying and actual dryer breakage may be eliminated altogether. Absolute uniformity of drying conditions is assured at all times by the sensitive controls furnished with the machine and the results are not compromised by changes in weather conditions. Waste heat dryers are particularly sensitive to weather conditions and more or less difficult to regulate on that account. This is especially true where a temperature not exceeding 225 degrees is carried.

The usual installation consists of a three track tunnel, the length of the unit depending on the plant capacity. Heat is supplied by exhaust steam.

Reduction of drying time, a uniformly dried product, ease of control and operation, and elimination of dryer losses, together with a reduction in rack car equipment, labor, and floor space prove the humidity dryer to be far superior to the types in more general use.

Special shapes are generally dried on a "hot floor," altho some manufacturers are using tunnel dryers for all classes of product. The "hot floor" is the most satisfactory dryer for Difficult and Coke Oven brick, as better workmanship is assured and thoro inspection easily accomplished.

The design and construction of hot floors varies with local conditions. A few plants have located the floor on top of the waste heat dryer. In such installations the usual steel plates are bedded in the concrete dryer roof, and the molding tables are situated along one side of the room. This is not an



A Proctor & Schwartz Humidity Dryer. This Type of Dryer Is Considered Very Efficient, Drying Silica Brick in 24 Hours

entirely satisfactory layout from the standpoint of drying results and efficiency and the dry heat makes working conditions disagreeable. The cost of mud distribution is somewhat higher with the average floor of this type, as it is usually situated at a higher level than the pans. The delivery of dry brick at the kilns for setting may also entail extra expense.

German Hydraulic Press Which Is Well Adapted for Silica Brick Making

How Hot Floor Is Built

The most satisfactory floor is steam heated and situated at the level of the yard to insure minimum mud handling and setting costs. Solid brick walls in the form of a hollow square serve as supports for the outside plates, and confine the steam to the floor area. Brick piers are built at suitable intervals inside the square to support the floor plates, which are usually quarter inch steel. The length and width of plates varies with local conditions. To insure proper fitting of plates and prevent steam leaks a strip of steel six inches wide is laid from pier to pier, and the plates butted together on top of this strip. Perforated steam pipes run under the floor, which for convenience in operation is divided into sections. The heat may at any time be cut off from any section desired.

Exhaust pipes should be provided for each section to insure circulation of the steam and reduce the amount of condensation beneath the floor. Proper under floor drainage is essential and good foundations must be provided for walls and piers.

Ventilate Hot Floor Dryer

Ventilation of the hot floor is important. The roof should be as high as possible and monitors or "dog houses" with easily opened windows provided. Good circulation of air without draft is necessary for efficient drying. The speed of drying may be regulated to a considerable extent by control of air circulation.

Exhaust steam is more satisfactory than live steam for hot floor heating, altho there are many times when no exhaust steam is available and provision must be made for cutting in live steam.

Drying Time Required

The drying time of irregular shaped brick depends largely on the mass represented. Thin sections will dry readily in a few days, while bulky shapes sometimes require several weeks. Brick that are bone dry will ring under a light hammer blow and nothing but bone dry brick should be set. There are some brick manufactured, notably large blocks for glass furnaces, which can only with difficulty be dried on a hot floor because of their great thickness. The setting action of the lime causes a hard shell to form on all sides of the brick before it has become sufficiently heated thru to drive the moisture from the interior of the brick. Hot floor temperatures are not high enough to form steam inside of the brick and capillary action is destroyed by the difference in structure of the outside shell and wet interior mass, so that invariably there will be a wet core even after weeks of drying. As a result when the brick is burned cracks are very likely to form. The insertion of lamp wicking has been suggested as a means of drawing out this imprisoned moisture, but this is hardly practical. The only practical safe method of drying large shapes rapidly is by the humidity dryer and they should be inserted into the dryer before the setting action of the lime begins to take effect. The humidity dryer dries from the center out so that there would be no wet core left in even the largest shapes.

Advantages of Hot Floor

The hot floor is more desirable for drying shapes than tunnel dryers, in that the setting foreman can always see what brick should be set first and is able to place various shapes in the kiln to best advantage. Some brick will only come out if set in the top of the kiln, while others will come thru anywhere and can be set in the bench. When tunnels are used the brick must either be set as they issue from the dryer, or additional expense incurred in sorting and storing cars and storage space for dry brick is rarely available.

Tests on Green and Burned Brick

I am told that the United States Refractories Corporation at Mount Union, Pa., has been making very extensive tests on the effect of drying conditions, grind, moisture content and workmanship on the mechanical strength of both green and burned brick. Tests involving a procedure similar to that used to determine the ultimate modulus of rupture of a burned brick have been applied to green brick and the result is termed the green brick modulus of rupture. The method is a measure of each variable in manufactur-

Coke Oven Shapes Made in Wooden Knock Down Mold or Slip Liner Mold ing conditions mentioned and has proved a direct aid in securing uniformity of product and is regularly used as a daily check on quality as indicated by the strength of the brick. The results obtained bear a direct relation to, and have been correlated with, the burned brick modulus in such a manner that the ultimate modulus may be predicted from the green brick modulus.

Strength of Green Brick

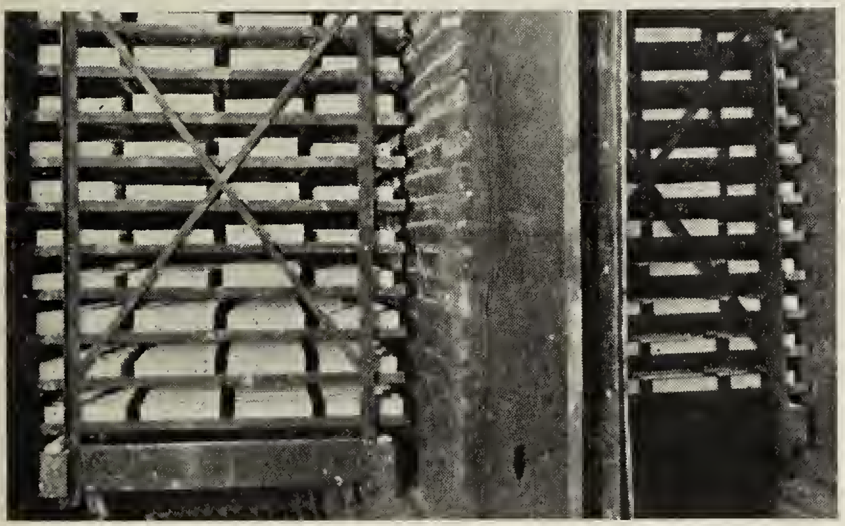
Green brick modulus of rupture varies from 17 pounds per square inch, which represents a poor brick, to 90 pounds per square inch, which indicates an unusually good product. The modulus of slop mud brick runs slightly lower than that of hammered brick, which would indicate that the molding method and workmanship have a decided effect on the mechanical strength. A fair average modulus of green slop mud brick has been found to be 37.5 pounds per square inch, while that of hammered brick is 41.6 pounds per square inch. These averages were secured from data collected over a period of three months under regular manufacturing conditions, and the brick produced were of the usual quality.

Brick dried on the floor are from 25 to 50 per cent. stronger than those dried in waste heat tunnel dryers. This would indicate that even under the best conditions an unavoidably large percentage of fine cracks will be found in tunnel dried brick which are not present in a floor dried product and as a result the strength is somewhat reduced. The fine cracks present in green brick open up in burning and are the cause of high kiln breakage.

Brick Gets Stronger in the Air

When brick are drawn from the dryer and allowed to stand some time in the open air they gradually gather strength. Thus it would appear that storage tracks for dry brick are desirable and that smaller handling and setting losses would be experienced provided the brick were allowed to stand.

All other conditions being equal the finer the grind the higher the modulus of rupture will be. Satisfactory grinding has been identified with the test results in such a manner that they serve as a constant check on the method. Other factors in addition to grind which affect the strength of the brick are workmanship, moisture content, temperature of the dryer, both at the entrance and exit, air velocity, and drying time. The mechanical factors involved in drying may be controlled and a standard practice developed, but the matter of workmanship is not easily controlled on account of the human element involved. Mechanical molding as seen in one machine already developed produces a much more uniform brick than can be made by hand. Hand made slop mud brick are the least uniform of any class of silica brick altho the consumer has preferred this type of brick to any other.



This Picture Shows Waste Heat Dryer Tunnels and Loaded Cars of Brick in Position

It appears that a carefully developed standard drying practice, preferably employing the humidity dryer, coupled with mechanical molding and scientifically controlled grinding would yield a much more uniform product, effecting thereby a reduction of manufacturing losses and an improvement in the life and service of the refractory.

Method of Piling Special Shapes on Hot Floor for Drying

The Convention Box

December 4, 5 and 6.—American Face Brick Association, French Lick Springs Hotel, French Lick, Ind.

December.—National Paving Brick Manufacturers' Association, plans not definite.

January.—Hollow Building Tile Association, Chicago, Ill., plans not definite.

February 4, 5, 6, 7 and 8.—American Ceramic Society, Atlantic City, N. J.

February 11, 12, 13, 14, 15 and 16.—Biltmore Hotel, Los Angeles, Cal.

February 13 and 14.—Canadian National Clay Products Association, Prince George Hotel, Toronto, Ont.

40,000 MILES OF ROAD BUILT ANNUALLY

During 1923 approximately 40,000 miles of surfaced roads will be completed. This is the latest estimate compiled by Thos. H. MacDonald, Chief of the United States Bureau of Public Roads. The program of 1922 construction approximated 37,000 miles of which 6,000 miles of pavement were to be of brick, concrete, sheet asphalt and bituminous concrete; 4,000 miles of macadam, waterbound and bituminous; 20,000 miles of gravel and 7,000 miles of sand-clay and top-soil roads. This year's approximated 40,000 miles will be classified in about the same way. If the present rate of progress keeps up the 400,000 miles of improved surfaced roads in use at the beginning of this year will be doubled in ten years.

One of the most important factors in this movement for more and better roads is the American Road Builders' Association. It will hold its 1924 convention and road show in Chicago from January 14 to 18 inclusive. The officers of the Association are Frank Page, president, E. A. Birchland, secretary and James H. MacDonald, treasurer.

* * *

WILL BUILD PLANT NEXT YEAR

Harry Landrum, 707 Linwood Ave., Columbus, Ohio, contemplates the erection of a tile manufacturing plant next year in Jefferson, Ohio, a report states.

What Europe Knows About Paving

Extremely Interesting Excerpts from the Report of Will P. Blair, Vice-President, National Paving Brick Manufacturers' Association—Paving Problem Unsolved in England—Europe Far Behind America

WILL P. BLAIR, vice-president of the National Paving Brick Manufacturers Association, recently made an extensive trip thru European countries for the purpose of studying road conditions. During the course of this trip Mr. Blair obtained much valuable information upon the method of pavement construction employed in Europe and also gained some first hand information of the failure and success of certain types of pavements in foreign countries.

Mr. Blair's report is extremely interesting and Brick and Clay Record would like to publish it in its entirety, but this is impossible due to its length. However, some of the most interesting statements in Mr. Blair's report have been excerpted and are printed here and clay products manufacturers will find these of interest and value.

In Spain

"A block asphalt street was under construction in Seville. The material for the concrete base, gravel and cement, was carried quite a distance from the supply, in small grass baskets, holding about a peck, the basket being placed on the top of the head of the workman. The surface of the concrete was finished and the block laid upon it with all the skill and workmanship of the best placing of encaustic tile in our country.

"Brick for structural purposes are still used generally in Spain. It would be strange if it were otherwise. Examples of their durability, centuries old, by Romans, Arabs and Spaniards in mosques, cathedrals, bridges and viaducts exist as perfectly today as if but a few years in service.

"The chief materials of construction in all the old forts, mosques and cathedrals at Grenada and Cordoba, as well as the immense Roman fortress Italia at Seville, are brick. The character of architecture represents with great distinction the different sovereignties to which the country was subject, Roman, Arab or Catholic. The Romans built for permanence and comfort, the Arabs or Moors excelled in ceramic ornament and the Catholics in carvings and paintings.

In England

"English streets and roads more closely parallel in all problems of construction, maintenance and use, those of America, than those of the European continent. London, however, like Paris, as to her principal thorofares, is a wooden block town and her outlying streets are macadam. A larger per cent. are of bituminous than in Paris and a few streets are paved with granite.

"I was informed by a prominent engineer of London, that frequently the life of concrete foundations was no longer than that of the wooden block wearing surface, regardless of its depth or thickness, in many instances it being 18 inches thick; that on reconstruction of the wearing surface, the concrete was found so crushed, from contraction and expansion, from the intermittent supply of water and moisture, that the practice was to install a new foundation entirely.

"There are no brick pavements in London. No effort hitherto has been made to introduce them. But the English brick manufacturers deserve great credit in maintaining brick in its rightful place for other structural purposes. London is a brick built city. In North England an immense supply of easily worked stone takes the place of brick thruout that area. In over a thousand miles of travel over the roads in England and Scotland, I saw but one concrete bridge.

"The brick structures in London show no signs of decay or impairment that in any way interferes with their use, yet many of them are ages old. Frame structures of any kind are out of consideration altogether.

In Holland

"Brick roads are to be found everywhere in Holland. Not only in the cities but thruout the country. They are the paving materials of least expense. The conditions found in Holland are particularly suited to the use of the character of paving brick that they manufacture in that country. They are in no sense vitrified. They are made of a sandy clay, the larger proportion of which is sand. They are burned as hard as they well can be burned without their being ruined by melting and over-heating in the kilns. The peculiar quality of these brick is that you rarely find one that is chipped, but they are subject to a surface wear by the traffic so that the general surface of the streets and roads is entirely smooth and has no abrupt depressions, altho somewhat undulating.

"The character of the soil and the presence of water and moisture is such that it is utterly out of the question to use concrete as a support for the wearing surface. They do the best they can in this respect with gravel and broken stone and while depressions are somewhat frequent in the brick streets and roads, the bump does not appear anywhere. It is an easy undulation that carries you over and past these depressions without any inconvenience whatever to the rider in the automobile.

"Many of these roads are ages old. It was impossible to ascertain definitely the age of any road except from circumstances and hearsay. On one of our trips, we motored over a road on which the guide and automobile driver said he was born. He was 32 years old and he was told that the road was several years older than he. While this road was one of medium traffic, so far as could be learned, no repairs have ever been made upon it. The joints between the brick were invariably filled with sand and that seemed to answer every requirement.

England Has No Cost Data

"England is without any cost accounting and data preservation system by law, yet the best qualified believe it is vital to her future road building and maintenance. As a consequence on account of lack of data roads are often maintained at dreadful economical expense, when they should be entirely reconstructed of material and design, adequate to meet the imposed traffic. But where reconstruction is undertaken, England is more and more using stone as a substructure course. It is conceded that it doubles the life of her bituminous macadam surfaces, because it is the only construction that holds such a surface to its grade alignment. As a result the repairs upon such a road are due to the wear and tear of the road by the traffic, which is small compared with the injury resulting from the presence of water.

Value of Studies—Conclusions

"What definite conclusions can be drawn from these studies and observations which are of advantage to our industry?

"First: Greater care in stabilization of our subgrade foundations by eliminating water and the utilization of stone and gravel for that purpose wherever economically possible.

"Second: In the use of stone for this purpose a better realization of its skillful installation.

"Third: The surface of our artificial foundations of whatever character, must be made smoother as preliminary to a smoother surface. This necessarily involves the thoro and uniform compaction of our sand beds.

"Fourth: Where concrete bases are used, expensive thickness should be discouraged as a thick base will crack and disintegrate as quickly as a thin one. Better a four-inch base with adequate drainage provisions than an eight-inch base with no drainage. A thoro understanding of concrete as a road material in order to deal with it intelligently and make the best of it."

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ANCIENT ITALIAN BRICKWORK

Dr. G. C. Mars, Director of Service of the American Face Brick Association, has just come back from an extensive trip thru Italy. He has brought with him a great number of photographs and a large amount of information and data regarding ancient and modern practices of bricklaying and brickwork in Italy. Four of the photographs which Dr. Mars has brought with him are reproduced herewith and show some fine examples of ancient brickwork which have withstood the ravages of time for over 2,000 years. The picture in the lower center shows a modern Italian residence built with brick the modern way and in very much the same manner as our brick are layed here.

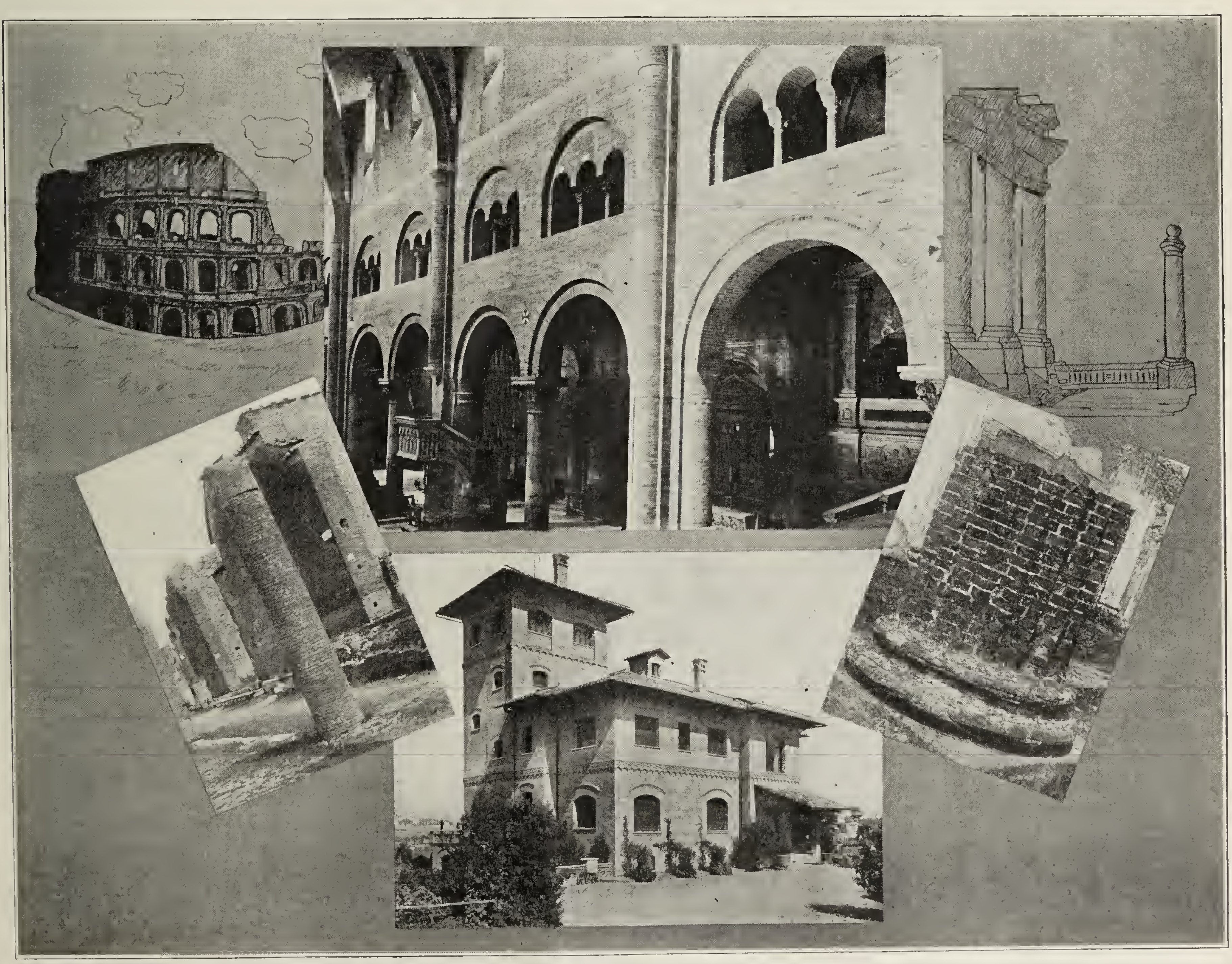
Brick structures and ruins of brick structures built during the early Roman period are quite common in Rome and other cities, Dr. Mars says. In many cases the brickwork was not left exposed but was plastered over to make a more finished and beautiful appearance. The brick were, of course, made by hand and many of the fancy designs as well as the arches and other intricate brick construction were made of brick molded in special shapes. The brick were for the most part hard burned and have a light red or pink appearance, merging in some cases almost into a buff.

From the information he has obtained during his trip, Dr. Mars is preparing a booklet which will be plentifully illustrated and which will contain very valuable information for architects and designers. This book will not be ready for sometime but when it is published will be an excellent source of ideas for architects.

⁂

MAY URGE PERMANENT COAL COMMISSION

It is said that a permanent Federal Coal Commission will be definitely recommended by the forthcoming report on the bituminous industry. It is recommended that this Federal Coal Commission be organized along the lines of the I. C. C. with power to audit operators' accounts and authorization to take over the mines in an emergency. Many of the findings of the Commission's report on Civil Liberties, which had been prepared for publication in July and delayed at the request of the bituminous operators until recently, will be regarded as spectacular and in some quarters it will be interpreted as almost excusing the Herrin massacres.



The Three Top Views Are Pictures of Ancient Italian Brick Work. The Two Small Ones on Each End Show Part of the Excavated Ruins of Pompeii. Below Is Shown a Modern Italian Residence of Brick. In the Column on the Right the Brick Were Cut and Then Plastered, Making a Fluted Column

Management and Superintendence

SELECTING THE RIGHT PULLEY

Nearly every pulley has something to commend it, whether low first cost, lightness, reduction of slip, convenience of application, and so forth. The most important of all factors, in the writer's mind, is the elimination of slip which costs many thousands of dollars per year in the United States. It is safe to say that thru the improper selection of pulleys our manufacturing plants are losing thousands of dollars daily. In many of these plants pulleys have been chosen with an eye on the low first cost rather than an ultimate cost, with a resulting waste of power, fuel and time that is astounding.

During recent years the writer has been looking upon steel split pulleys more and more favorably. They have a number of advantages over other pulleys. When new, both cast iron and wood pulleys do very well, but after they are in use they do not work as satisfactorily as steel pulleys or pulleys with steel faces.

A steel pulley does not swell upon getting wet and does not shrink upon getting dry. Atmospheric conditions have no influence whatever. Therefore, due to the fact that there is no swelling or shrinking when a steel pulley is once made tight on a shaft, it remains tight and does not slip, and therefore does not require rebushing and refacing every little while. The steel pulley does not glaze the surface of the belt or become slippery due to liberated carbon as does a cast iron pulley. Steel pulleys also are immune to fire. They are not so liable to break as cast iron and of course they will not burn like wood or paper pulleys. The wood pulley has a disadvantage in that it is a poor conductor of heat; consequently, if there is much slipping, the pulley may heat up to the ignition point and start a fire. The steel pulley, on the other hand, is a good conductor of heat. The heat due to slip or creep simply passes thru the rim and is then radiated out into the atmosphere. On an average the steel split pulley is 40 per cent. lighter than the cast iron pulley and can be applied to the shaft without taking the shaft down. No set screws are required and only under exceptional circumstances is there any advantage in using a keyway.—W. F. Schaphorst, M. E.

* * *

MANUFACTURER'S EXPERIENCE IN HAULING BRICK BY MOTOR TRUCK

Whether or not it pays to maintain a fleet of trucks to haul brick within short radii is a question which has been debated many times. Some manufacturers maintain that teams are cheaper than trucks, others that trucks can more cheaply be hired than owned, and still others believe the most economical plan is to own trucks. In view of these different opinions the findings of a manufacturer who has had considerable experience in operating a fleet of four trucks will be interesting. H. Garber of Olive, Calif., has sent Brick and Clay Record some very interesting figures and statements regarding the use of his motor trucks. Mr. Garber's statements are printed herewith.

"The extent to which motor trucks can be used for brick delivery depends largely, of course, on the geographic location of operations. Here in California there is much in our favor and only for a few months during the winter are we handicapped on account of soft ground.

"The greatest handicap our business could have would be the necessity for making our deliveries with horses. Our four trucks will deliver one million brick per month within a radius of from four to ten miles from our plant, and to do the same work with horses would require about 20 teams. With as many teams as that our loading would be slowed up and delivery costs would be increased.

"We use dump trucks which dump from the rear. The breakage caused by dumping brick is kept to a minimum by our drivers which can be done by dumping very slowly. The loading is done by four men, the driver and three loaders, the loaders being paid a fixed price per thousand, which assures our loading cost.

"We have fixed prices per thousand for delivering to the various cities within our reach which are added to the yard price of brick. In establishing the delivery prices, we intended that these prices should cover the actual cost of delivery and by keeping accurate costs on the operation of our trucks by the month we find that the cost of delivery very nearly balances the hauling sales. We have found, too, that the truck driver has much to do with the cost of operating trucks.

"Anyone having had experience in operating trucks will know that a good truck driver can save his wages in repair parts, gasoline and oil. So with efficient drivers and good management, trucks can be made to show a profit on the delivery end.

"We have found, however, that the better plan is to hire all hauling at a fixed rate per thousand and then you know exactly what your delivery costs will be.

"In making our monthly cost sheet on our trucks, we have to estimate some items of cost based on previous experience, as for instance, tire expense. We estimate the amount of this item for the year and then prorate it per month. Our cost sheets appear with the following items:

DELIVERY COSTS FOR MONTH OF ———

Wages—Truck drivers.
Insurance—Truck drivers' wages.
Gasoline and oils.
Tire expense—(estimated).
Truck insurance.
Truck licenses.
Repairs—(estimated).
Depreciation—(25 per cent.).

"The majority of our sales have been within a radius of 25 miles from our plant and up to this distance the motor truck is the cheapest and at the same time quickest method of delivery, but beyond that distance, if an equitable freight rate is obtainable and the plant is located on a track, the motor truck cannot compete with rail shipments.

"If one of our customers requires a rush delivery, within an hour from the time we get his call, we can load and deliver to him 2,500 brick from five to six miles from our plant."

* * *

WANT INDUSTRY'S AID IN TESTING DRYING PROPERTIES OF CLAYS

The Bureau of Standards has developed a series of tests applied to the drying properties of clays. In order to have this work include a wide range of materials and to become of general, practical use, manufacturers are urged to submit for test clays in use at their plants. It will be desirable to receive a variety of clays, those which have the best drying characteristics as well as those which offer difficulty in drying.

Clays submitted should be accompanied by the following information:

1. Kind.
    - (a) Surface clay.
    - (b) Shale.
    - (c) No. 1 or No. 2 Fire clay.
2. Articles manufactured.
    - (a) Hollow tile.
    - (b) Sewer pipe.
    - (c) Brick (Paving or Building).
3. Drying treatment in plant.
    - (a) Type of dryer.
    - (b) Time required to dry.
    - (c) Temperatures in dryer (if tunnel dryer, at hot end).
4. Difficulties experienced.
    Extent of loss of ware.

The tests to which the clays will be subjected will include the following:

1. Average water of plasticity.
2. Drying shrinkage at 110 deg. C.
3. Safe and ideal rate of drying stated either in per cent. of moisture loss per hour or, if the weight relative to the exposed area of the manufactured pieces be given, the time can be stated in hours, with the proper temperature, humidity and air circulation to be maintained.
4. Rate of drying shrinkage compared to loss in moisture and the stage of drying at which shrinkage is complete.
5. Strength of the unfired piece.
6. If desirable, dry porosity and the moisture diffusion constant can be given; however, these factors are related and applied in the drying rate under No. 3.

It is expected, from this work, that it will be possible to recommend improvements in drying treatment and to overcome difficulties now current in the handling of many materials. It will also be possible to give data on new materials, predicting their drying behavior in commercial dryers.

The manufacturers can aid largely in this work by immediately submitting samples of their raw material together with full details of character and treatment, as previously outlined.

*Auger Machines and Dies**

Scorers and Scratchers

These act as baffles and retard the flow so that the speed of the whole column must conform to the grooved side. A reduction in the number of grooves may speed up that side or a fast wall may be slowed up by increasing the number of grooves. Scorers may be moved in or out to vary the resistance.

Some clays will weld easily in one inch distance, others will require three to six inches. Greaves-Walker states that tapered dies do not weld cracks any better than straight dies. If troubled with bridge cracks, move the bridge back from one-half to four inches and serrate the front of the bridges; wrap a chain around the bridge or change the temper of the clay.

Cracking from Lamination

If one mass of clay slides over another mass of clay and produces an un-united plane of separation, this becomes a plane of weakness and may show itself by drying or firing cracks. What is the cause of these laminated sections?

Soft clay seams in the earth, subjected to pressure, develop the laminated or fissle structure of shales which show similar planes of weakness when mined. Even soft wax when pressed will separate into layers. Mica particles will arrange themselves perpendicular to the applied pressure and in a similar manner, any irregular shaped clay or sand grain will orient itself to present its broadest surface perpendicular to the pressure. A log will offer its length to the pounding of the waves or will ride lengthwise down a stream.

The clay particles which lie adjacent to a surface over which they have moved will present broadest areas parallel to this surface. Hence it will be easier to cause a separation in this direction than in the direction which will necessitate tearing across the edges of the particles.

Shrinkage in Drying

A clay on drying shrinks towards a common center. This is true for both solid and hollow ware. However, two or more centers often develop and the shrinkage takes place in opposite directions. If the clay is not strong enough to withstand this strain, a crack develops between the two centers. Lamination planes thus often become cracks or planes of separation. The cause of two or more centers may be due to (1) Irregular shape. This is illustrated by angular tile or even rectangular tile with thick sections or corners. (2) Adjacent clay masses having different shrinkage due to difference in water content or composition.

Differential flow in the die will cause a stretching of a section between the highly compressed and retarded outer shell and the fast moving center. Three or more units for shrinkage will thus be developed. The center will have a normal or average shrinkage; the outer shell will have a low shrinkage and the stretched intermediate zone will have a large shrinkage. The dried or fired ware is likely to show more or less concentric divisions separated by cracks.

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*Editor's Note—This is the fifth part of a paper prepared by the Pacific Northwest Clayworkers Association. In compiling it much information was obtained from the references quoted in Brick and Clay Record of September 4, 1923.

* * *

DEDUCT ASSOCIATION DUES ON INCOME TAX RETURNS

The Northwestern Lumbermen's Association, thru its secretary, William H. Badeaux, will shortly call the attention of its members to the fact that association dues can be deducted, when making income tax returns to the Federal Government. Mr. Badeaux quotes the following authority:

> "Article 104 of Section 214, Regulations 62, provides that a professional man may claim as deductions * * * dues to professional societies and subscriptions to professional journals. * * * "
>
> "Section 234. Deductions allowed corporations. Article 561 provides that * * * in general the deduction from gross income allowed corporations are the same as allowed individuals, with various exceptions relative to dividends. * * * "
>
> "The Department has specifically ruled under O. D. 421, CB 2808 that * * * membership fees or dues paid by individuals and corporations to a Chamber of Commerce or Board of Trade are deductible from gross income as a business expense **provided the membership is employed as a means of advancing the business interests of the individual or corporation.** * * * "
>
> "Also, O. D. 496, CB 2916 provides that * * * membership dues paid by the members of an association organized for the purpose of promoting the business interests of exporters of forest products represents a consideration for benefits flowing directly to such members as incident to their business and may, therefore, be deducted from gross income."

The Association Accountants advise:

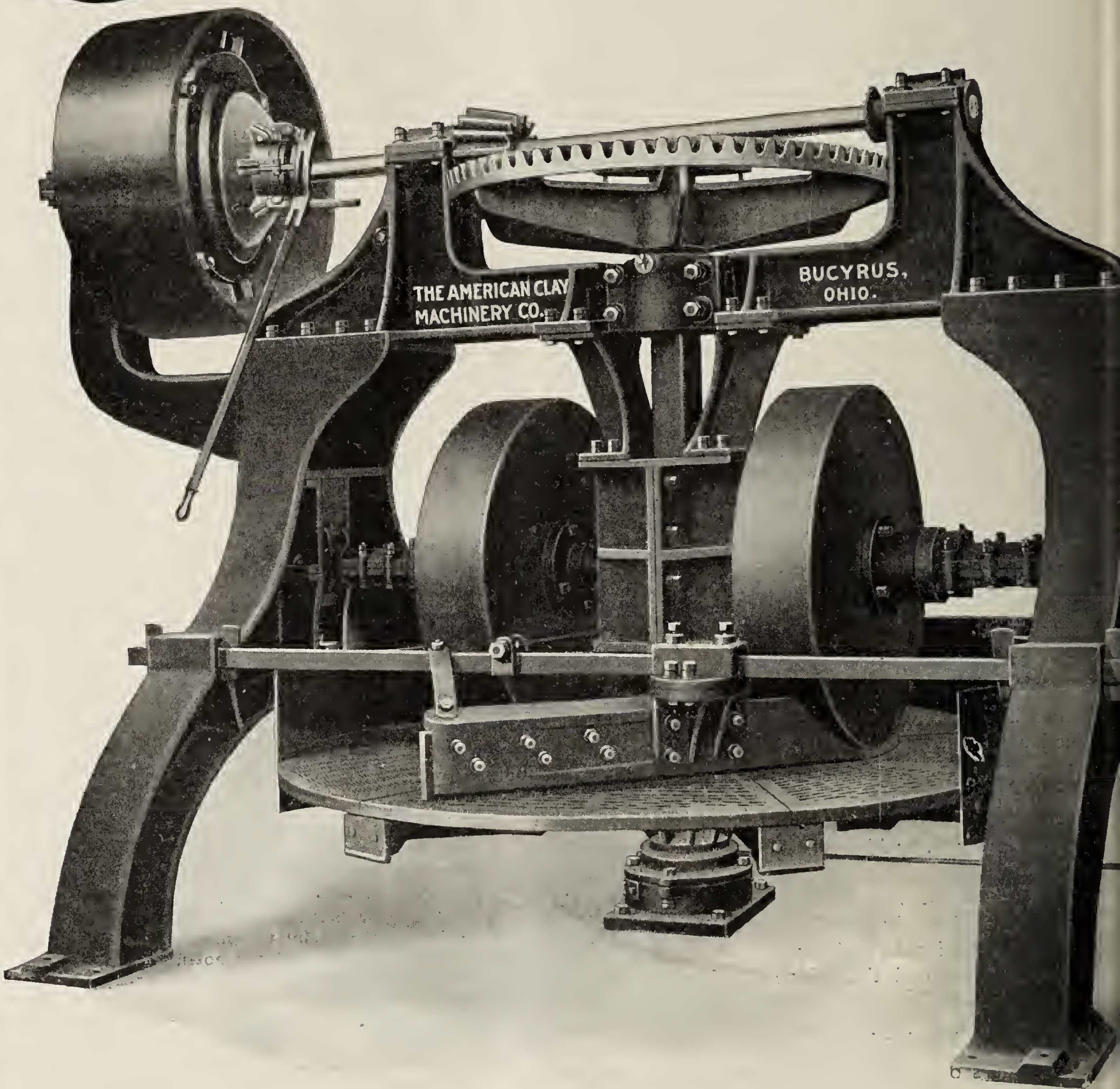
> "We have always deducted the Association dues of the Northwestern Lumbermen's Association and it has always been allowed without question.
>
> Lumbermen paying their dues to the Association prior to December 31st may deduct such payments as a business expense in the year of 1923 or if their books are kept on an accrual basis and the lumbermen take into account the association dues for 1923, charging expense the amount of such dues and crediting accounts payable (Northwestern Lumbermen's Association) the amount of the expense, they will be allowed to deduct such expense within the year 1923 for income tax purposes."

* * *

On page 691 in this issue is a fine article on Grinding and Screening Clays.

Built Right
Run Right

PRODUCER



American Standard Nine Foot Dry Pan, Weight 31,000 Pounds

The Hadfield-Penfield Steel Co., Bucyrus,

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uilt Right Run Right" Units of The "American" Line are both
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The Hadfield-Penfield Steel Co.,
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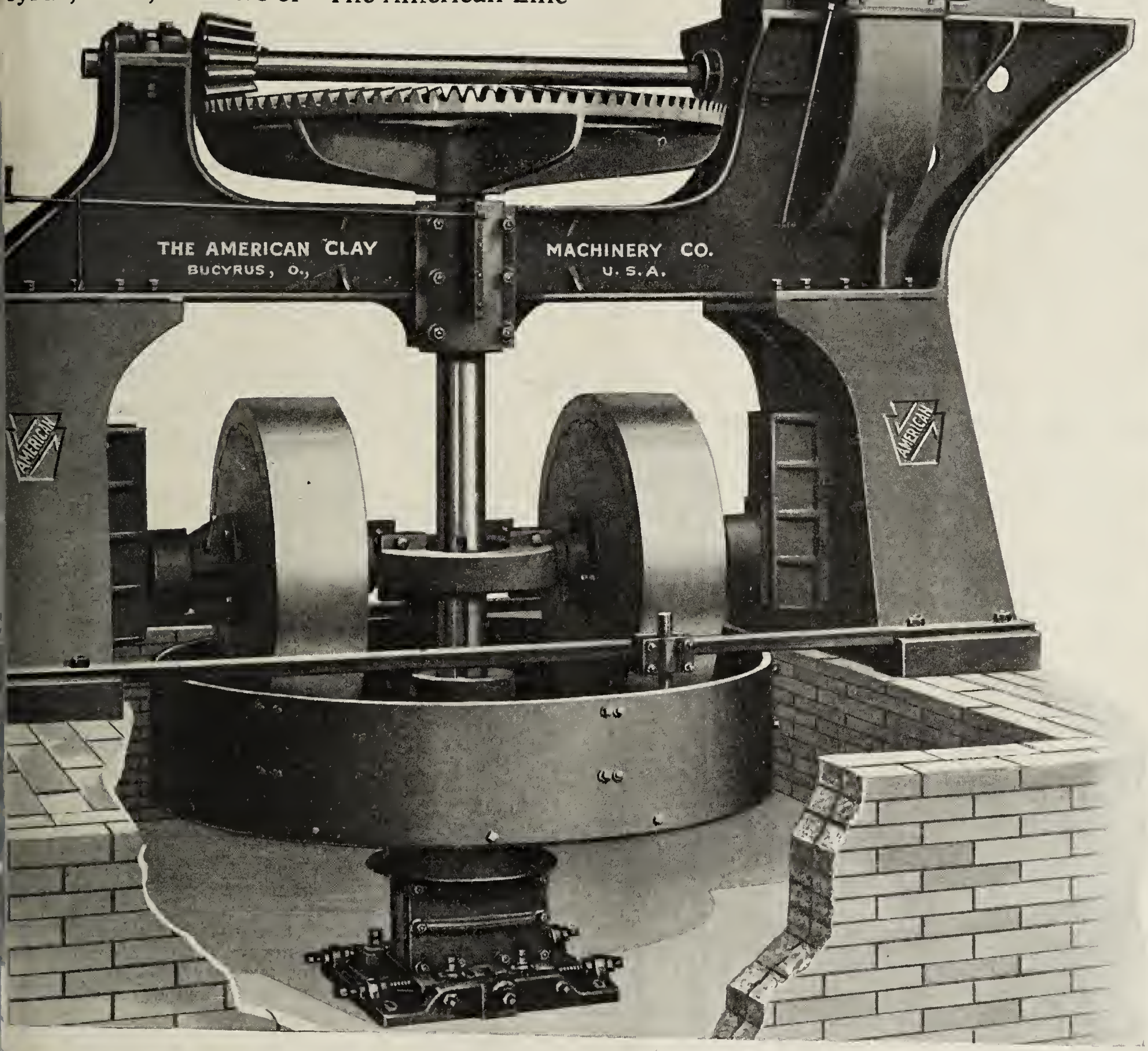

American Heavy Duty No. 335 Wet Pan, Weight 70,500 Pounds

An Ironton handling rock cars in a limestone quarry.

ECONOMICAL haulage, as applied to your special conditions, is assured by a thorough survey from our Sales Engineers. There is no obligation on your part if you allow us to submit facts and figures concerning your particular problem. We will not recommend an IRONTON Storage Battery locomotive unless we know it will produce satisfactory results.

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A Cure for One of the Worst of Dry Pan Troubles

Our Dry Pan Accelerator when placed in any make of dry pan will increase its capacity 25 to 40 per cent when wet or damp material is being used. When the material is dry the Accelerator will increase its capacity about 20 per cent.

The Accelerator is a simple but wonderfully efficient device, so working that it keeps the grates or screens clean and open, regardless of dampness of the material being used, and effectually prevents either dry or damp material from collecting on the outer surface of the grates next the rim. This coating beginning at the largest place of the screening surface reduces the capacity so much that by preventing this coating the Accelerator will often pay for itself in one day's run.

Full information: Description, price and terms furnished on application

Dry Pan Accelerator Company
Carthage, Illinois

The Letter Box

A Place Wherein Letters That Have General Interest Are Published and Commented Upon

WANT PROTECTION FROM GOVERNMENT

The foreign brick situation has stirred up Hudson River manufacturers to a point where they are considering asking the government to protect them from the influx of foreign products either with a protective tariff or by letting down the immigration bars and permitting foreign labor to come in.

Brick and Clay Record has received the following letter from George Archer, manufacturer at Haverstraw, N. Y., which voices his opinion on the subject.

"I cannot understand why the authorities in this country ever allowed the tariff to be removed from foreign brick, when the brick manufacturers have to pay taxes and help support the government. If foreign articles are allowed to come into the country free, how does the Government expect the manufacturer to compete with them, as they pay very little for labor in foreign countries. If the door were open for foreign labor, the brick manufacturers would then be able to get labor much cheaper and could sell brick for less money, but as it is today we are compelled to pay exhorbitant prices for labor.

"The same would apply to other manufacturers, and this keeps prices high.

"I think that Congress should take some action at an early date to protect the manufacturers in this country."

* * *

DO WASTE HEAT DRYERS HARM EQUIPMENT?

J. O. Trautwein, a well-known engineer in the clay industry on the subject of dryers and drying brick, has written Brick and Clay Record a letter with which he hopes to correct the impression which in his opinion is becoming prevalent to the effect that dryer cars and dryer equipment deteriorates more quickly in a waste heat dryer than in other types. Mr. Trautwein's letter is reprinted herewith.

"An impression is being created that waste heat dryers shorten the life of dryer cars by unusual corrosion. Only recently I saw an advertisement that if a certain paint were used on dryer cars, it would greatly increase the life of the cars, used in waste heat dryers. This statement gives one a wrong impression as to the actual corrosion of dryer cars when used in connection with waste heat.

"I am a great believer in paint. Any metal or other material will deteriorate if not painted, whether it is used in a dryer, or whether it is merely exposed to the air and the elements. Wood exposed to the elements will rot if not painted. Our automobiles require painting every so often, iron and steel will rust or corrode if exposed to the air, if not covered with some kind of coating or paint. Paint helps to preserve all materials. The deterioration of the commodities above mentioned is one of nature's peculiarities, but to give the impression that corrosion takes place more readily in waste heat dryers than under other conditions is covering quite a bit of territory.

"There is no good reason why a waste heat dryer should corrode dryer cars any more than any other dryer, or even as much as any other dryer. Radiated heat dryers, in their present form, perhaps destroy dryer cars to a much greater extent than any type of dryer on the market, and there is a reason for it. I have also seen waste heat dryers, which are improperly designed and operated, cause undue corrosion, but if either kind of a dryer is properly designed and operated, no corrosion of cars should take place.

"In the case of a waste heat dryer, an analysis will show that if the heat from a kiln is drawn after the burning has stopped, there is nothing in this air to cause corrosion. If the circulation in the dryer is properly proportioned, and the dryer properly handled, there is no reason why there should be any unnecessary corrosion. There will be no sulphur in this air, even tho there may be some gases hanging in the kiln from the last burn, but the first pass of outside air thru the kiln will remove them. I have had cases, however, where fuel in the fire boxes was allowed to smolder during the period of drawing waste heat, and the circulation, of course, kept these embers of fuel alive, and the gases given off by these smoldering embers passed thru the dryer tunnels; this condition should not exist if proper care is taken in the operation of the system, nor should the moisture be allowed to hang in the waste heat dryer, especially at the entry end of tunnels.

"On the other hand, take a radiated heat dryer, as it is commonly built and which carries its gases of combustion in a flue under the tracks. This flue, as well as the fire boxes in which combustion takes place, is usually built of brick.

"Brick work heated up by the fires in the furnace, and by the gases in the flue under the tracks, is bound to open up and crack, allowing these gases to come in contact with the moisture in the dryer tunnel, and the sulphur in the gases of combustion combines with the moisture in the dryer tunnel, forming an ingredient which is hard on all metals, especially steel.

"My observation has shown dryer cars in Trautwein Dryers to be in as good condition, wear and tear excepted, after ten years of operation as they were on the day the installation was started. I believe metal should be painted, to preserve its life, wherever it is used, but I wish to correct the impression given that there is an unusual amount of corrosion of equipment caused by the drying of brick in waste heat dryers."

Questions and Answers

Best Authorities in Every Clay Working Branch Are Called Into Consultation—Their Advice Is Free to You, Thru These Columns

Address all communications intended for this department to "Editor Questions and Answers, care of Brick and Clay Record," Chicago

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HOW CAN "VELVET" BRICK BE MADE?

Brick and Clay Record has received from a manufacturer in Pennsylvania a request for help to manufacture a velvet texture face brick. Many of the readers of this journal undoubtedly manufacture this type of face brick and could give our Pennsylvania correspondent some valuable information. Will some face brick manufacturer help out? The following is the question:

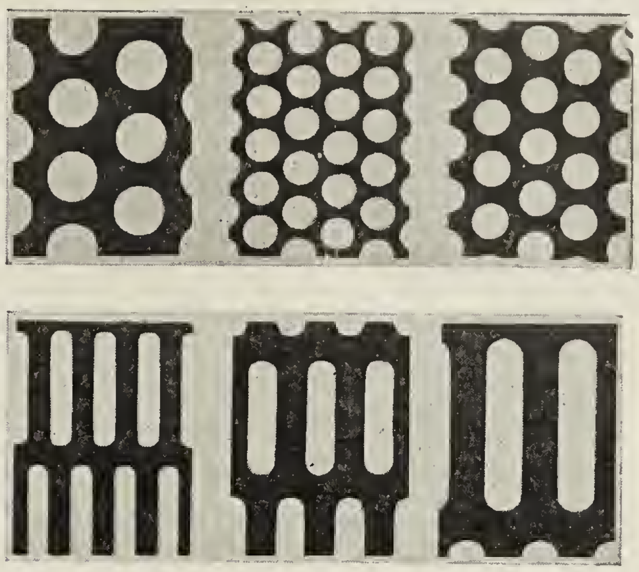
"We have recently installed a new brickmaking machine and an automatic side-cutter, and we are trying to make a velvet texture brick on it. Previously we used a reel-cutter and made a tex brick of a good velvet appearance on it; but we are unable to make a brick of as nice a velvet appearance as on our former equipment. The brick from our new machinery is much nearer to a smooth-faced brick, even tho we use the same wire arrangement on the new machine as we did on the old one. Our material is also the same. Our operator claims that he could run a much softer column on our old machine and this accounts for the more desirable velvet appearance. He claims that he cannot run the column soft on the new side-cutter, and that if he did buckling of the column would result, which in turn would result in brick of different sizes. Is he correct in this claim, and what can be done to get the former velvet appearance?"

⁂

MORE INFORMATION ON BURNING

Question 1,074, Pennsylvania, published in Brick and Clay Record of October 16, has aroused a great deal of interest among men experienced in the question of drying and burning. The question outlined a number of troubles which

Perforated Steel Screens



For Screening Clay, Shale, Sand, Gravel, Stone and Cement

All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

Sheets furnished flat or rolled to shape for revolving screens.

THE HARRINGTON & KING PERFORATING CO.

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NEW YORK OFFICE: 114 Liberty St.

CAUCASIAN

OXIDE MANGANESE

Powdered—Granular
For Speckled Effects

PRECIPITATE

CARBONATE BARIUM

For Prevention of Scum
Thereby Producing
Deeper and Richer
Color

THE
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CHEMICAL CO.
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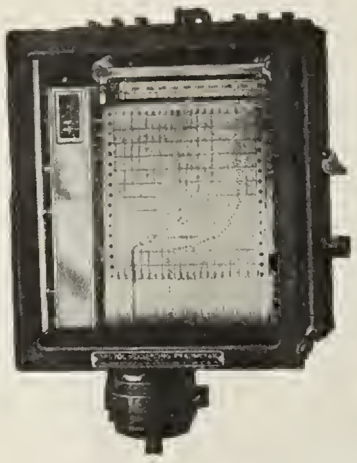


Control The Heat Your Coal Generates

Determine temperatures in all portions of the kiln. Find out where your fuel is being wasted.

Eliminate underburnt and overburnt ware in parts of the kiln by knowledge of temperatures.

Be sure that knowledge is accurate by installing Bristol Pyrometers.

Ask for 68-page catalog AE-1401.

THE BRISTOL COMPANY
WATERBURY, CONNECTICUT

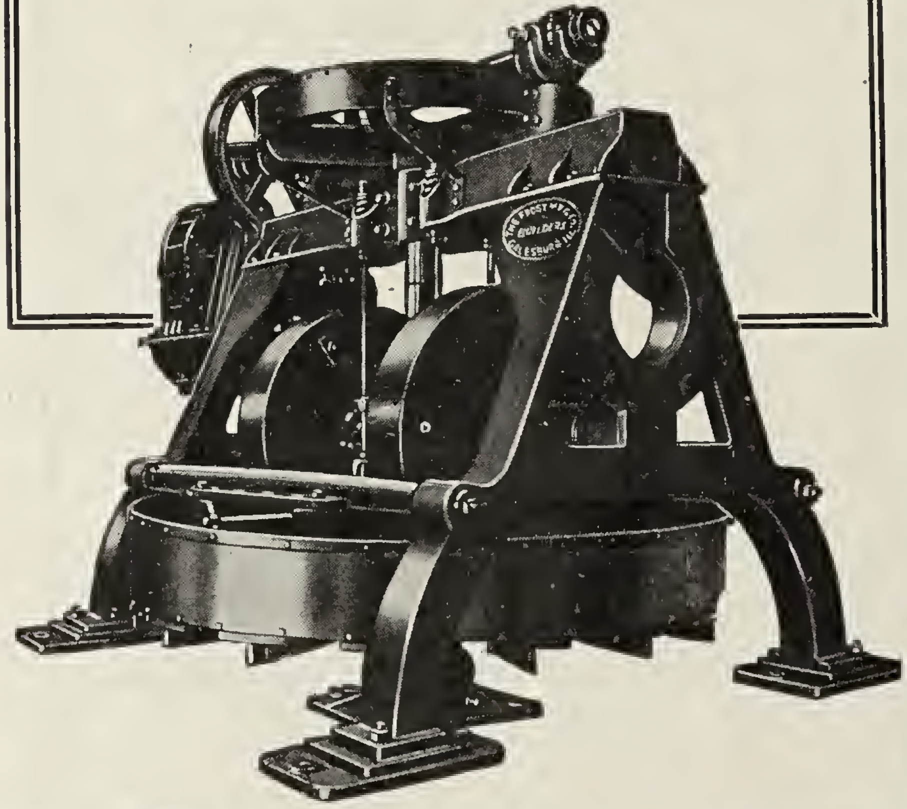
BRISTOL'S

INDICATING RECORDING PYROMETERS

BETTER QUALITY WARE

That is the result when Frost Dry Pans are put on the job.

THE FROST MFG. CO.
GALESBURG, ILLINOIS



QUALITY ECONOMY SERVICE

the manufacturer in Pennsylvania had in burning his ware. Unfortunately it is too long to be reprinted here. However, several answers have voluntarily been sent in by clay men in an effort to help the manufacturer solve his troubles. Two of these are reprinted herewith. The following reply is from Otto Pommer of Mt. Wolf, Pa., a clay man with 25 years' experience in burning wares.

"I am very much interested in the question '1074, Pa.' and would like to make a suggestion which may be of value. I would suggest that live steam be used in connection with the exhaust to increase the capacity of the dryer. This can be done by placing a low pressure valve on the exhaust pipe and setting the exhaust valve so that the back pressure against the engine is not too great to slow up the speed. Another pressure valve should then be placed at the live steam pipe, setting this valve at the same pressure as obtains at the exhaust pipe. In this way both heat sources can be used at the same time. The use of swinging doors at the receiving end of the dryers, with openings or cutoffs about two feet over and back, will often help a great deal. The draft carrying the moisture to the stack will then be directed more under the cars rather than directly under the dryer roof.

"With regard to the Pennsylvania manufacturer's burning troubles and his difficulty in getting the proper heat at the bottom of the kiln, I would recommend very highly that the damper be used towards the end of the firing period. This would probably be the quickest way to drive the heat to the bottom under his present conditions. There should be no difficulty in doing this inasmuch as the manufacturer is equipped with pyrometers.

"His water-smoking is done very carefully and I would recommend that this time be shortened by raising the temperature gradually—say up to 600 deg. F., or until the water-smoking in the kiln has been completed. The end of the water-smoking period may be determined by the iron rod which he is now using. If the stack continues to show water-smoke this can sometimes be traced to wet flues in the kiln or the stack caused by poor drainage and lots of rain, or it may be that underground water reaches the flues. This moisture, of course, is still being dried out after the kiln contents are thru with water-smoking. I have quite often found this to be the cause of water-smoking signs from the stack, after the brick in the kiln were thoroly dried. The time of water-smoking can be shortened considerably by building a small furnace outside of the stack which is used to heat the stack so that it will draw well from the very beginning.

"The discoloration on his brick is not described very fully, but it is not at all necessary that this is a result of the water-smoking. There are various causes and varieties of scum and this trouble must be traced back to the machine. It might be a result of the oil used at the machine. If this is the cause it might be overcome by covering part of the brick face with paper so that the oil does not reach it. To determine whether the water-smoking is the cause of the scum, a few test brick could be set in the kiln, using a small muffle so the water-smoke cannot reach the brick. At any rate he must trace the discoloration to its source and he can then try to eliminate the causes.

"His practice of giving the kiln all the air possible during the water-smoking and oxidation periods, in order to drive the gases off quickly, is correct. Carbon gases or commonly called 'Blue Smoke' are usually considered dangerous and act very differently with regard to their bloating or black coring tendency. I have burned a shale with which it was necessary to stop firing entirely at this period, but I have also burned many clays which did not cause any trouble in keeping up the firing speed, regardless of the blue smoke, nor did they give any trouble with bloating or black core. I would advise the Pennsylvania manufacturer very strongly to experiment at this period, increasing the heat slowly. I would not advise stopping the kiln entirely, but try holding the heat at the same temperature. Bloating or black coring trouble is not mentioned and this leads me to believe that he is over-careful during this period and probably has not tried to increase the heat, fearing that trouble would be encountered. With the ware that I am now burning I obtain a very heavy 'blue smoke' but do not stop increasing the heat as I obtain no black core whatever. I would not use the damper at this stage at all, but as soon as he is finished with the blue smoke the dampers should be put in and the draft checked considerably. I believe he will find that the bottom will improve greatly and that the coal consumption will be very small at the finishing period. The fire boxes should be kept nearly tight and ash pits should not be cleaned more than necessary. Since he has pyrometers he can hold the heat steady at one point in the last 16 to 24 hours and he will then observe that his bottom temperature is rising rapidly. I used this dampering method last winter at a plant near Buffalo, N. Y., and had a 98 per cent. No. 1 drawing with 20 per cent. less coal consumption. This achievement, however, took quite a long study and necessitated close observation.

"I would strongly advise this Pennsylvania manufacturer to work along this line and he will doubtless get results unless his local conditions are entirely hopeless. There is a little book published by the Brick and Clay Record, entitled 'Clay Working Problems' which consists of 101 questions and answers selected from the pages of Brick and Clay Record. This book is very valuable to every brick manufacturer. In it the Pennsylvania man will find on page 13 a question—'No. 568 Illinois—Difficulty in heating kiln bottom,' which I answered as follows:

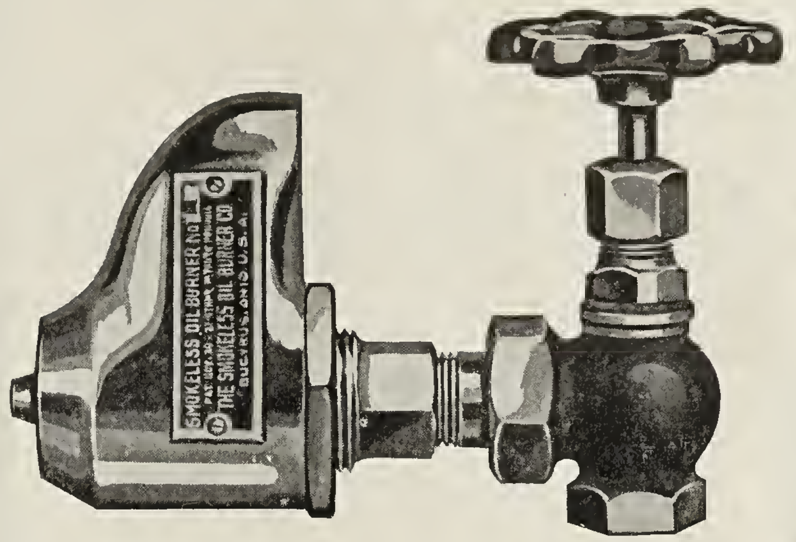
"'Our kilns (round down-draft) are operated in the following manner: Water-smoking is carried on with open dampers and all the draft it is possible to get. The kiln is then heated until a good red color can be observed thru the upper peephole, the dampers being wide open while this is being done. The dampers are then closed so that the circulation of air in this kiln is very nearly at a standstill. When this stage has been reached, it can easily be determined by observation whether there is any movement of air thru the upper peephole. After this, every three hours, I open the damper again for a period of about an hour to bring up the heat. The firing during the period between the opening of the dampers must not be quite as heavy as when the dampers are open. Continuing with this procedure I burn down cone 02 on top of the kiln and 06 at the top peephole and nearly always 011 or 010 two courses over the bottom. When the cones are down I burn for six hours with a high oxidizing flame to remove the smoke color on the brick.'

"In the book mentioned is another inquiry—No. 288 Illinois—about bloated or black core brick—which would be of interest to him too and should help, as theory and practice have to work together to bring results."

P. J. Laubscher of Fredericksburg, Ohio, also noticed the question and answer on "Burning Troubles and Remedies" which appeared in the October 16 issue of Brick and Clay Record and volunteered:

"The following information will, without a doubt, be a very great help if carefully carried out by the party whose kilns are discussed in your Question and Answer department in a recent issue.

"Hard brick from bottom to top, from wall to wall, and with a saving of time and fuel will be obtained, without burning up the top setting in order to get the bottom, if the kiln bottom has about six inches of bats and some insulation



THE efficient and economical installation is a permanent profit to every brick yard equipped with Smokeless Oil Burners.

More and more, brick men are discovering that Smokeless burners eliminate uncertainty of bad burns and increase the average of good brick throughout the kiln.

Experiments are a waste of time and energy. With a reliable burner and expert service men, the Smokeless can meet your every demand.

The Smokeless Oil Burner Co.
Bucyrus, Ohio

USE THE
CLASSIFIED COLUMNS

Have you a plant for sale?
Will you sell some old machinery?
Do you need an executive?
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RESULTS ON ALL OF THESE POINTS WILL SURPRISE YOU

Address
Brick and Clay Record
407 S. Dearborn Street
Chicago, Ill.

The Cash Value of AIR

Write for bulletin describing highly developed American Blower Equipment and its efficiency and economy when applied to any of the following lines:

Waste Heat Drying
Kiln Cooling System
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The American Blower Company offers the co-operation of a competent engineering department for the solution of any Industrial problem involving the handling of air. Correspondence on any subject is invited.

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EXHAUSTERS • VENTILATING FANS • AIR WASHERS • BLOWERS • ENGINES
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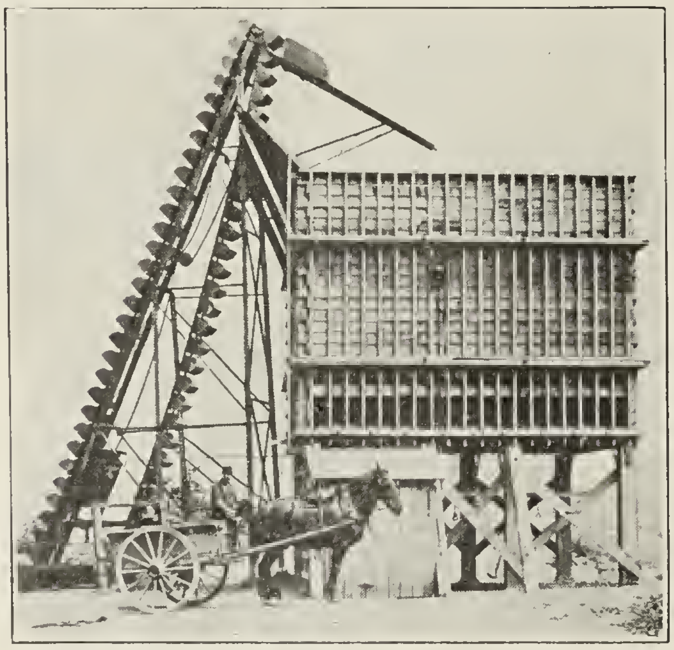


A Fairfield on the Job!

Fairfield Coal Handling Machinery is preferred by clay products manufacturers everywhere, because it is *dependable* and *economical.*

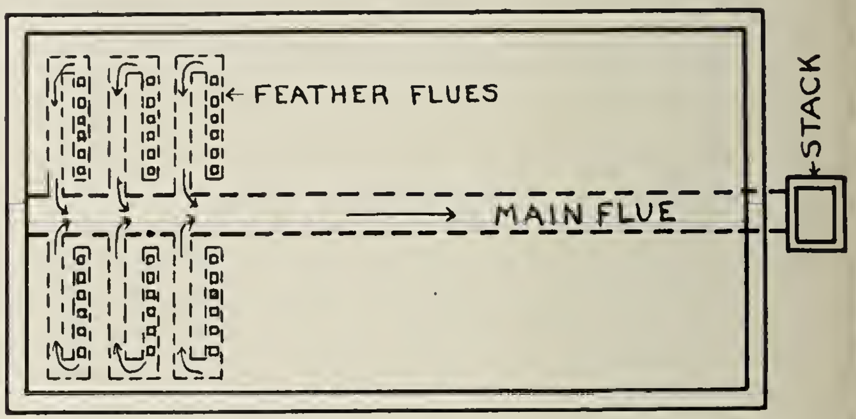
Write for Bulletin No. 20

The Fairfield Engineering Co.
Marion, Ohio

material mixed with it. This should then be paved and a flue system started on it. Care should be taken that the flues are not too large, so that all of them will be in use during the process of burning. Avoid all dead flue space.

"The flues should extend from wall to wall. The first flue will discharge into the center flue from both sides of the kiln. It should be paved solid on the top.

"The second flue does not have an opening into the main or center flue, but instead it has a division wall in the center. This flue has holes or perforations in it as required. The flue discharges to the outer walls and empties into the first flue at the outer wall ends. By this system you have every flue operating and collecting more heat than by the straight flue system.



Kiln Floor Flue System Described by Mr. Laubscher in the Letter Printed Here

"Now in the perforations I would prefer the holes, since they are much easier to clean. Besides you do not have to tear up the flooring each time you clean the flues. Flues should be cleaned every time you burn a kiln.

"These holes would depend upon the draft you have in water-smoking. I find it very economical to use forced draft to begin with. For this kind of draft I find that one hole five inches square to every 2,000 brick set in the kiln and spaced evenly thruout the kiln is sufficient.

"Coke is the best fuel with which to watersmoke.

"The kiln walls should be kept well padded so that no leakage of gases or air is permitted.

"The crown should be well insulated with some good insulating material.

"The doors as a general rule are built 13 inches thick. They should have an insulation between the walls which will insure good ends in the kiln. This will insure good brick around the wickets."

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

McCREDIE FLEES COLD WEATHER

Wm. McCredie, brick and tile manufacturer of Lyons, Ont., is spending the autumn and winter in California, his address being 1947 Julian Ave., San Diego.

KRUSON NOW WITH WELLSVILLE COMPANY

I. A. Kruson, formerly with American Refractories Co., of Danville, Ill., has accepted a position with the Chicago (Ill.) Fire Brick Co. as district superintendent at Wellsville and New Florence, Missouri, plants. E. B. Hager has also been added to the organization as assistant superintendent in Wellsville.

CLAY MEN OUT TO BAG ELUSIVE DEER

The following clay products men are among the nimrods who have been hunting deer up north: Andrew Dods, Charles A. Millar, Chas. Harrison, J. R. Price and Charles H. Wallace.

LINTON MADE GENERAL MANAGER OF PACIFIC COMPANY

Robert Linton, prominent mining engineer, has become connected with Pacific Clay Products, Inc., Los Angeles, Cal. His capacity with Pacific Clay Products, Inc., will be that of general manager, a position for which his previous training fits him peculiarly well.

SAMUEL COOPER, PIONEER, DIES

Samuel Cooper, Sr., 70-year-old retired brick manufacturer, is dead at his home in Akron, Ohio. He was the son of Joseph Cooper and was born in Staffordshire, England, July 26, 1853. The family came to Akron in 1882 and two years later Cooper and his two brothers Joseph and William launched a brick manufacturing business under the firm name of Cooper Brick Co. He remained in that business until five years ago.

CHILLCOTE CHANGES POSITION

Mason Chillcote, for 24 years connected with the Chicago Vitrified Products Co., has left that concern and is now with the Chicago Fire Brick Co. In his new capacity Mr. Chillcote has charge of the Chicago Fire Brick Co.'s following plants: the Chicago Sewer Pipe Co., the Mecca Sewer Pipe Co., and the Brazil Hollow Tile Co.

HAS BRICK TESTED FOR STRENGTH

The Santa Paula Brick & Clay Products Co. has now had several weeks of successful operation at the location near Santa Paula, Cal., in Ventura County. In order to prove to local builders the worth of the product, George A. Anderson, secretary, had tests made by the Raymond G. Osborne Laboratories of Los Angeles. On brick taken from every fourth row, these compression tests showed a tensile strength varying from 1,500 to 6,748 pounds per square inch. On this showing, the company feels encouraged to go ahead and enlarge.

TURNS RANCH INTO SHALE PIT

C. T. Bolfing, former secretary of the Chamber of Commerce of Gilroy, Cal., discovered one day that on his mountain ranch in the Redwood district, he had a deposit of shale, that was fine for the manufacture of vitrified brick. Careful tests proved its quality. He tried to interest outside capital, but did not succeed. The war came on, and the project was tabled. But last year he decided to start himself. So trucks are now hauling the shale down to his yard just out of town, and he is manufacturing brick at the rate of 20,000 per day. He finds his market is good, and his supply of clay is unlimited.

CALIFORNIA POTTERY PLANT SWAMPED

F. A. Costello, president of the California Pottery Co., left on October 24 and spent several days at the operating plant at Merced, Cal. He found the plant doing trojan work, but not enough. The immediate purpose of the visit was to prod them up. For three months this plant has been behind on orders, chiefly on roofing and building tile. 12 cars of roofing tile are needed pronto. The demand for roofing tile and building tile in the bay region is rapidly increasing; and a new impetus has been given by the experience of the Berkeley fire. So, altho the manager of the plant declares they are working to capacity, Costello is trying to crowd in a few more pieces of tile per day.

Substantial Savings
and
Increased Production
result from using Burke Electric Motors and Generators. They operate successfully under the most severe conditions.

Send for list of satisfied users in your industry.

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BURKE ELECTRIC CO.
MAIN OFFICE AND WORKS
ERIE PENNSYLVANIA
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CINCINNATI: UNDERWOOD ELECTRIC CO.
KANSAS CITY: W. T. OSBORN
SAN FRANCISCO: *Coast Equipment Co.*

Blazing The Way To
Decreased Fuel Consumption

The increasing application of the Russell Tunnel Kiln is the most convincing proof of the truth of our claims. Our first installation was made years ago when the belief was current that the periodic down-draft kiln was the peak of efficiency. Since that time labor and fuel costs have risen to exorbitant figures and the saving effected by a tunnel kiln assumes a still larger aspect. Large concerns have become responsive to every suggestion to conserve energy as its scarcity and cost become a more imminent problem.

The Russell Tunnel Kiln is serving the clay industry by greatly decreasing fuel consumption due to continuous operation. A few of the benefits that have followed in the wake of Russell Tunnel Kiln installations are:

(1) Fewer kiln losses because of uniform temperatures.
(2) Decrease in fuel consumption.
(3) Decrease in burning time.

Our Engineers will consult regarding your burning problems at your request

Russell Engineering Company
Boston ST. LOUIS New York

Russell

"We Are Very Well Pleased With the

BAY CITY EXCAVATOR"

Says The Mohawk Brick Company, Mechanicsville, N. Y. "It is inexpensive to operate, doing all the work which we want it to do, and we realize that if this machine had not been installed this spring, we would have had considerable difficulty in digging our clay, owing to the present labor conditions.

"We recommend the machine very highly."

Investigate the time and labor saved. Full details on request.

THE BAY CITY DREDGE WORKS
BAY CITY, MICHIGAN
Eastern Office: E. P. Reading, Vincent Bldg., New York City

GEARS

SMOOTH running; correct in design, accurate and true to pitch, Caldwell gears are bound to please you. We make all types—machine-molded, cut tooth, mortise gears, worm gears, etc. Caldwell Promptness is Traditional. It is at your service. Our stocks assure prompt shipment.

Let us figure with you next time you are in the market.

H. W. CALDWELL & SON CO. LINK-BELT COMPANY, OWNER
Dallas, Texas, 709 Main Street—Chicago, 17th Street and Western Ave.
New York, Woolworth Bldg.

CALDWELL

CALIFORNIA PRESS BOOSTS BRICK

The results of the determination to push the use of brick in construction, thruout central California, is showing itself in some good constructive brick news and brick arguments in the local press. The San Francisco Journal sets forth in a well-written article the value of brick from the standpoint of durability, cheapness of insurance, safety, comparative cheapness of construction, and showing how common selected brick can be used as face-brick and the wall waterproofed. The article concludes with the showing that prices are cheaper in San Francisco, and have been for years, than in most of the large cities of the country, being $15.50 in San Francisco as compared with $20 in New York City.

DENVER PLANT IN FINANCIAL TROUBLE

Financial difficulties recently caused the Denver (Colo.) Shale Brick Co. to close their brick works. 60 men were furnished steady employment by this company. At a meeting of creditors it was arranged to reopen the yard in the near future. The trustee for the property is C. N. Kinney of the Kinney Adjusting Co.

REORGANIZE McDONALD BRICK CO.

The McDonald Brick Co., Ludowici, Ga., which has been reorganized, has resumed the manufacture of brick. The new officers are: C. J. McDonald, president; J. Lang McDonald, vice-president; and Leo C. Burgman, secretary and treasurer.

WILL REVISE GEORGIA RATES

Marked changes in the freight rates on brick and clay products for interstate shipment in Georgia are contemplated by the Georgia Public Service Commission, in an order recently issued as a further step in the commission's effort to remove discriminations between various important localities thruout the state. Brick and clay products, lumber and other building materials, are among the various commodities named. In some instances the rates will be increased, and in others a decrease will result. A permanent decision will be given by the commission and rates announced before the end of the present months.

STEVENS TAKES LADIES THRU PLANT

Douglas P. Stevens, secretary of the Acme Brick Co., near Cayuga, Ill., conducted members of the Altrusa club, a woman's organization, thru the plant recently, providing a thoro inspection of its operations and explaining in a concise and informative manner the making of brick. A steak fry and picnic supper on the grounds brought the afternoon trip to a merry close.

NORTHWESTERN TAKES OVER DENVER CO.

The Northwestern Terra Cotta Co., of Chicago, Ill., has taken over the Denver (Colo.) Terra Cotta Co. George P. Fackt, formerly vice-president of the Denver company, and who was chiefly responsible in putting over the deal for that concern, has been made president and general manager. The other officers of the Denver Terra Cotta Co. are: Vice-president, Harry J. Lucas, who is also vice-president and general manager of the Northwestern Terra Cotta Co.; vice-president, John Fackt, of Denver; treasurer, Adolph F. Hottinger, who is at present treasurer of the Northwestern; secretary, W. F. Denious of Denver; assistant secretary, E. J. Dykes of Denver; assistant treasurer, Arthur H. Kaeppel, who is at present holding that position with the Northwestern company.

The Denver company will retain and will do business under its own name and its corporate integrity will not be disturbed. The agents and salesmen of the two companies will co-ordinate their efforts under a plan now being worked out and designed to prevent duplication of effort.

TILE COMPANY TO MAKE BRICK

The Summitville (Ind.) Tile Co., until now an exclusive manufacturer of drain and building tile, is contemplating the installation of brick making machinery and will probably manufacture brick before long.

MANY OHIO MEN WILL BE AT FRENCH LICK

A large delegation from Columbus and the Hocking Valley face brick section has arranged to attend the annual meeting of the American Face Brick Association at French Lick, Ind., early in December. The Columbus delegation will be headed by J. M. Adams, president and treasurer of the Ironclay Brick Co., who is president of the American Face Brick Association, David Lehman, general manager of the Ironclay Brick Co.; William G. Hoagland, general manager, and P. C. Hodges, superintendent of the Claycraft Brick Co., Emmett Howard, president of the Columbus Fire & Face Brick Co., and others.

PLANNING BIGGEST HOME SHOW

Plans to make the 1924 Indianapolis Home Complete Show exceed in scope the "million-dollar" show early this year, were made known recently with the announcement that the exposition will be held April 7-12 in the Manufacturers' building at the state fair grounds. The show will be put on by the Indianapolis Real Estate Board, with J. F. Cantwell again the director. Scott R. Brewer, president of the board, has named the following committee in charge of the exposition: E. L. Cothrell, chairman; Willis H. Kinnear, treasurer; Henley T. Hottel, secretary; William L. Elder and H. L. Richardt. Mr. Cothrell was a member of last year's committee.

KALONA PLANT STARTS WORK

The Kalona (Ia.) Clay Co. resumed activities the first week in November with a force of 15 men and the stock of manufactured products has been so reduced that the plant will be in operation as late as weather permits. M. I. Cain is the new manager. The plant has been closed two months.

REORGANIZE PLANT AT CLAYWORKS, IA.

Johnson Clayworks, Inc., Clayworks, Ia., four miles south of Ft. Dodge, has been organized with $600,000 paid up capital to succeed Johnson Brothers Clayworks, with D. G. Johnson, president; William Johnson, vice-president; E. J. Halligan, secretary-treasurer. The Clayworks plant will be continued on the same scale as in previous years but the new capitalization will permit extensive improvements and operations upon a greater scale. Facilities will be provided to keep up with the rapidly growing business.

BANNON BUSY PRODUCING TILE

The P. Bannon Pipe Co., of Louisville, Ky., reported excellent business, and that the company was rushed in caring for its orders on sewer pipe and hollow tile. The company has been so busy on these items that it hasn't pushed a number of its specialty lines, such as fire brick, nor has it marketed a new fancy face brick which it prepared to market a couple of years ago, and then sidetracked due to being too busy to produce it.

LOUISVILLE PLANTS NOT EXPANDING

Business is humming with the brick and clay working industry of Louisville and vicinity, and while some companies could use additional capacity, it looks as if most of them are content to operate such capacity as they have at full speed, rather than install additional machinery, or kiln space. While business is humming right now the feeling in the trade is that demand will begin to slow up within the next year or so, and there is a feeling that after the present boom period is over there may be a spell of quiet business. Development of new additions now

SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK REGISTERED U.S. PATENT OFFICE
A CELITE PRODUCT

Kiln Insulation

BARRIERS TO INDUSTRIAL WASTE
SIL-O-CEL HEAT INSULATION
FILTER-CEL FOR FILTRATION
CELCOTE BOILER WALL COATING
FRAXITE HIGH TEMPERATURE CEMENTS

HEAT lost through walls and settings of uninsulated kilns increases production costs

1—by causing an excessive consumption of fuel;
2—by making it difficult to get high temperatures and hold them evenly;
3—by causing imperfectly burned ware, due to uneven temperatures.

SIL-O-CEL Insulation reduces production costs

1—by preventing heat waste, thus lowering your consumption of fuel;
2—by holding a uniform temperature within the kiln and so reducing the number of rejects;
3—by protecting the outer walls of the kilns from temperature strains, prolonging their life and saving repair bills.

Complete information on Sil-O-Cel Kiln Insulation gladly sent upon request. Write nearest office for Bulletin B-5A.

CELITE PRODUCTS COMPANY
New York 11 Broadway Chicago-53 W. Jackson Blvd. San Francisco-Monadnock Bldg.
Offices and Warehouses in Principal Cities
CELITE PRODUCTS LIMITED, New Birks Bldg., Montreal, Canada

Let A Robbins Portable Car Unloader Unload That Car For You!

It will load directly into a motor truck or wagon, filling the largest conveyance in a few minutes or it can be extended to serve a storage pile by the use of a separate portable conveyor as shown above.

The Robbins Portable Car Unloader can be operated either above or below the rails. It will handle 30 or more tons per hour which means greatly reduced handling costs and elimination of demurrage charges. Thus it pays for itself over and over again.

Remember that the Robbins Portable Car Unloader does not cost a lot of money to buy but it saves a lot of money when used. Think it over. Then write for the details.

Robbins Machinery & Supply Co.
444 W. Grand Ave. Chicago, U. S. A.
"Machinery for Moving Merchandise"

You Do This But Once—

When you install ROBINSON KILN BANDS on your kilns. They will eliminate the chances of your kiln walls bulging and cracking, thus making them leak-proof. Many satisfied users in the industry.

Write for full data, also for catalog of clay machinery.

FRANK H. ROBINSON, Inc.
Dryer Cars and Clay Working Equipment
918-920 Behan St., N. S.
Factory and General Office PITTSBURGH, PA.

YOU

Might as Well Gamble on the Gee Gees

Every time you guess at correct kiln temperatures you gamble on securing satisfactory results. You might as well gamble on the gee gees!

Human judgment in brick burning is like human judgment on the race course. YOU LOSE!

Quit *guessing* at burning temperatures. The Thwing Chart is like a map—it tells you just where you are—knowledge means profits.

THWING
INSTRUMENT CO.
3347 Lancaster Ave.
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Thwing PYROMETERS

might catch such improvements idle for some time to come, and the trade is rather slow in undertaking any enlargement.

CLAYTON COMPANY WILL MOVE TO DUBUQUE

Kendall Burch, secretary, has made known plans for the removal of the factory of the Clayton (Ia.) Brick & Tile Co. from Clayton to Dubuque. Officers of the company have petitioned the city council for the lease or purchase of city owned property on the levee for factory and storage purposes. The Clayton Brick & Tile Co. is owned almost entirely, it is said, by Dubuque men. It has operated a factory at Clayton, north of Dubuque, for the past few years. Its principal offices are in Dubuque.

KENDALL BURCH

In the petition to the council the company asked for 500 feet frontage on the levee just south of the Dubuque-East Dubuque highway bridge. Members of the council apparently favor the proposal to lease this property to the tile company.

PRODUCTION BEST IN EIGHT YEARS

The demand for fire brick lines has been abnormally good all fall. W. E. Gifford, sales manager of the Louisville Fire Brick Works, reports that while August was the largest month in the company's history, October exceeded it by a nice margin. September was a big month, but fell below August in the matter of shipments. The company today has some nice business in hand, and will be busy for some time to come. Operations are being carried on at full capacity in both the Louisville and Grahn, Ky., plants. The Louisville plant has been getting out a larger production this fall than at any previous time in seven or eight years, due to good car supply, good fuel supply, and good business.

FOREMEN OF FULTON COMPANY FORM CLUB

The foremen of the Fulton (Mo.) Fire Brick Co., who have been meeting every month at a dinner have organized a club and elected the following officers: G. M. Gamble, president; John Kester, vice-president; Frank Chittolin, secretary-treasurer. Besides the officers, the following are members of the organization; James Sarter, J. F. Becker, George R. Criswell, Roy Craghead, Harlan McNamee, and Frank Hensley. C. O. McNamee is an honorary member of the club.

The club has been in the habit of meeting once a month at a restaurant or hotel, for the discussion of business matters, but recently has leased a three room house on a farm west of Fulton, which belongs to the company, and will hold future meetings there. The house was painted, decorated and furnished, and a house warming held there on Hallowe'en night. It has been christened "King Tut's Hut."

HYDRAULIC DECLARES DIVIDEND

A dividend of one per cent. on the six per cent. cumulative preferred stock, payable December 1 to stockholders of record November 20, was declared recently by the Hydraulic-Press Brick Co., St. Louis, Mo. The stockholders will have received six per cent. for the current year with the payment of this dividend. The stock has been paying at the rate of four per cent.

STRIKER FINED $100 FOR CONTEMPT

Joseph Kyrenski, one of the strikers who was enjoined by the Chancery Court from picketing the brick manufacturing plant of Sayre & Fisher, Sayreville, N. J., during the recent strike there, was committed to jail on October 25 by Vice Chancellor Buchanan at Trenton until he pays a fine of $100 for contempt of court. Kyrenski was said to have declared that he did not pay the original fine and costs amounting to $210 imposed on him because Conrad F. Nystrom, vice-president of the United Brick & Clay Workers' Union who directed the strike at the Sayreville plant, had promised to satisfy the judgment. Kyrenski was taken to the New Brunswick county jail.

PLANT, IDLE FOR YEAR, WILL OPEN

Donahoe & Nolan, Trenton, N. J., who suspended producing operations during 1923 because of the intense scarcity of efficient labor, plan to resume manufacturing brick in 1924, and in the meantime they will bring their manufacturing facilities up to a point where economical operation is possible. They will install a brick machine and make other mechanical improvements. This plant, which was established 43 years ago, has in the past produced between 30,000 and 36,000 brick a day, mostly face brick, which was marketed in New York. Donahoe & Nolan own a clay pit at Ewing, on the Philadelphia and Reading Railroad, and the clay from this mixed with clay taken from a pit in their yards makes an excellent material for both face and common brick.

INCORPORATES FOR $2,250,000

The Star Brick Corporation, manufacturers of brick tile and so forth, has been incorporated with a capital stock of $2,250,000, it is said. The incorporators are Robert K. Thistle, Harry C. Hand and Samuel C. Wood of New York, N. Y.

PORTSMOUTH INCREASES CAPITAL

In order to enlarge the plant and increase facilities, the Portsmouth Refractories Co., of Portsmouth, Ohio, has filed papers increasing its capital from $60,000 to $500,000.

FIRE BRICK SALES HOLDING UP

Fire brick trade in Columbus, Ohio, and the Hocking Valley section of Ohio is holding up remarkably well for the time of the year. There are quite a number of improvements to plants going forward which require fire brick and as a result the demand is good. One of the best features is the demand from eastern sections which is absorbing practically all of the surplus in Ohio territory. Prices on fire brick remain firm at the levels which have prevailed for some time.

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71 ST STREET AND BROADWAY

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Unique Congo Room—Medieval Grille and Blue Room Restaurants.

New York's latest hotel achievement

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Ideas Are Money

THAT is why "101 Ideas for Improving the Clay Plant" shall be worth real dollars to every owner, operator, manager or superintendent of a clay products manufacturing plant.

This is a book of 128 pages, containing exactly what its title indicates—101 bona fide ideas fully illustrated. It presents no theories of cost reducing or untried ideas which might seem good, but every one of the ideas presented has been tried out in actual service in the clay plant.

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TRADE MARK REGISTERED U.S. PAT. OFFICE
JUNE 21st, 1910

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When you do just what another does and as well as he does it, you have many peers, but the minute you do ordinary work just a little better than others do it, or do difficult work with unusual ease or excellence, you are different. Your value jumps. VEELOS Genuine Balata Belts do the regular work in a better way,—and hard work they do unusually well. They are built for it.

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STEVENSON'S EQUIPMENT
CUTS THE COSTS

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- Crusher Feeders
- Pan Feeders
- Bucket Elevators
- Gravity Elevators
- Brick Barrows
- Tile Barrows
- Sewer-Pipe Barrows
- Gigs,
- Etc.

STEVENSON

SUGAR CREEK COMPANY SOLD

A syndicate of Dover men has purchased the Sugar Creek Clay Product Co.'s textile and building brick works just east of Sugar Creek, Ohio. The purchase price was $200,000, it is said, and possession will be taken December 1. The syndicate is headed by H. A. Reiker, J. G. Hammond, F. M. Hammond and Thomas Kemp—the latter a prominent brick manufacturer.

OHIO FACE BRICK LESS IN DEMAND

Face brick demand in Columbus and central Ohio shows signs of abating to a certain extent but this is attributed to the lateness of the season. There is still considerable building going forward but new projects are not as numerous as formerly. Face brick prices are showing some weakness but this is not material. Quotations range from $23 to $37, f. o. b. plants. These prices are about $1 less than have been prevailing. Common brick demand is holding up quite well for the time of the year and prices are steady at $16.50 to $18.50 delivered on the job, depending on texture. There is not a heavy supply of either face or common brick available at this time.

FORM COMPANY AT TORONTO, OHIO

Papers have been filed with the secretary of state chartering the Ohio Valley Clay Products Co., of Toronto, Ohio, with an authorized capital of $350,000 to manufacture and sell all kinds of pottery and clay products, it is reported. Incorporators are G. W. Stratton, D. S. Stratton, A. R. McClain, H. E. Stratton, and W. R. Albans.

FORM TILE COMPANY AT ORLANDO

The Stout-Deiterly Co. was organized and incorporated in mid-October at Orlando, Fla., with a capital of $100,000, and will, according to the charter application, manufacture interlocking tile and kindred products. Officers named are R. H. Stout, of Orlando, president; C. C. Deiterly, vice-president, and J. Stout, secretary. It is reported the company is planning early establishment of a plant at Orlando.

BRICK HOMES BUREAU STARTS OFF WELL

Immediate success has followed the opening of the Brick Homes Bureau, Cleveland, Ohio, announcement of which activities was made in last issue of Brick and Clay Record. The opening was inauspicious, since the prime object of the new organization is to strive for more business for its members, E. C. Roberts, secretary-manager, pointed out. At an early date a meeting of the board of directors will be held, at which time the program for general publicity will be given attention.

Meanwhile the value of the association to its members already is being proven, since several prospective builders have come to the headquarters seeking information on building which they intend to do soon.

KUSA B. & T. CO. BUILDS ANOTHER KILN

In order to handle the increased business an additional kiln has been added to the plant of the Kusa Brick & Tile Co., of Henryetta, Okla.

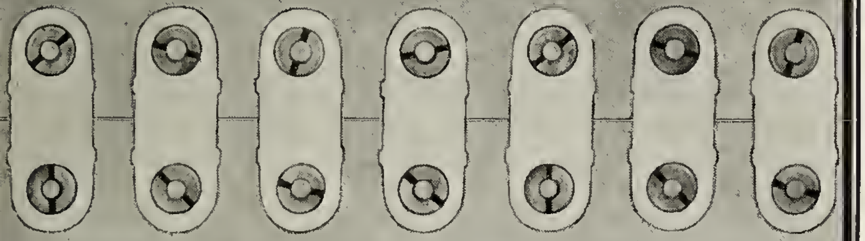
COLUMBUS BUILDING LESS IN OCTOBER

Building operations in Columbus during the month of October were fairly active altho they did not come up to the corresponding month last year. One of the features was the large number of garages licensed, amounting to 350, capable of housing 1,000 motor cars. This was the largest number ever licensed. In all 138 dwellings were licensed compared with 131 dwellings in October, 1922, and 155 dwellings in September of this year. In all there were 677 permits issued having a valuation of $1,345,500 as compared with 547 permits and a valuation of $2,788,600 in October of last year. Since

FLEXCO

TRADE MARK

"HIGH DUTY" CONVEYOR BELT FASTENERS

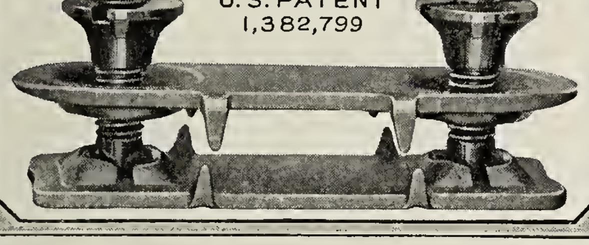


Lengthens Conveyor Belt Service

Makes a tight butt joint for flat or troughing conveyors from 5/16 inch up to the heaviest conveyor belts made. Has tremendous strength and durability. Is readily applied and in mining, sand and gravel, nitrate, rock products and similar operations has given longer service than anything previously tried.

A Trial Offer. To any responsible firm we will gladly submit a "make good" offer in order to put Flexco High Duty Conveyor Fasteners under their observation. Write.

FLEXIBLE STEEL LACING COMPANY
4671 Lexington St., Chicago, Ill.
In England at 135 Finsbury Pavement, London, E. C. 2



Made for maximum service not merely the average

TRADE JENKINS MARK

Jenkins Bros

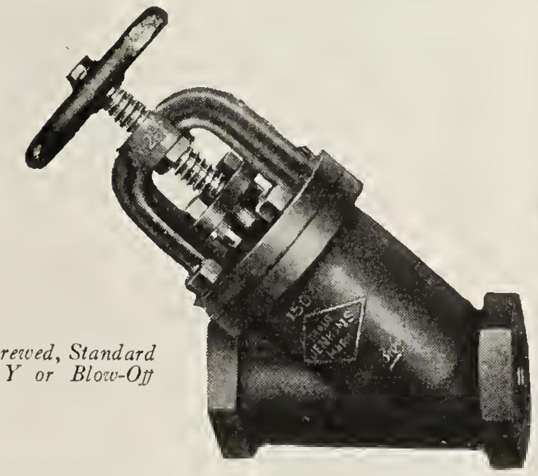


Fig. 296, screwed, Standard Iron Body Y or Blow-Off Valve.

For Handling Heavy Fluids

This valve has a full opening, almost in line with the flow. Fitted with Jenkins Renewable Disc, and renewable seat rings. It is specially designed for handling thick fluids and for blow-off service.

Valves in bronze, iron, and steel for all requirements. At supply houses everywhere.

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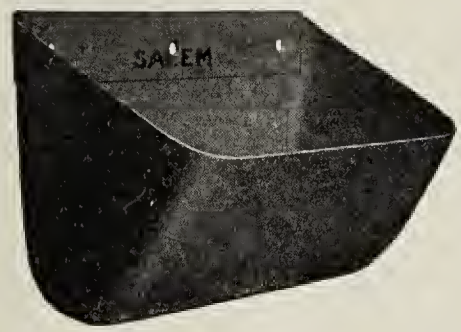
Always marked with the "Diamond"

Jenkins Valves

SINCE 1864

Salem Elevator Buckets



We are manufacturers of the original SALEM ELEVATOR BUCKET which is used for handling all classes of materials in many different industries.

This type of bucket is of one piece construction, with rounded contour throughout, smooth in form, durable in service and clean in handling and delivery of materials.

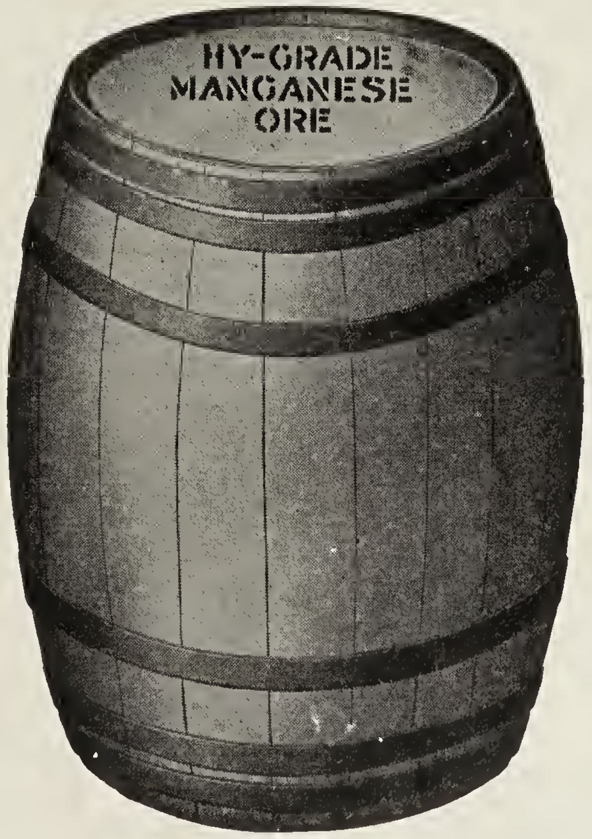
There are no seams in front nor on the ends, the laps being made on the back and bottom at the ends. On the back the laps are riveted or spot welded; on the bottom the end pieces are bent under and hammered tight.

The widest range of service is covered by a very full line of regular types and sizes and made in various gauges of steel, from the lightest practical for ordinary work to the heaviest necessary for the most severe duty.

Write for new price list.

THE WEBSTER MFG. COMPANY

4500-4560 CORTLAND ST., CHICAGO
Sales Offices in Principal Cities



HY-GRADE MANGANESE CO.
WOODSTOCK, VA.

Miner and Grinders

Especially Prepared for Brick Making

NATIONAL MANGANESE
Gives Diversity to Face Brick

Meet the demand of the building public today for varicolored brick.

NATIONAL MANGANESE enables you to
—make high-priced French Grays out of light-burning and buff brick.
—produce novel speckled effects.
—convert red-burning clays into a popular shade of brown.

NATIONAL PAINT & MANGANESE CO.
P. O. Box 184, LYNCHBURG, VA.

Miners and Grinders for More than a Quarter Century

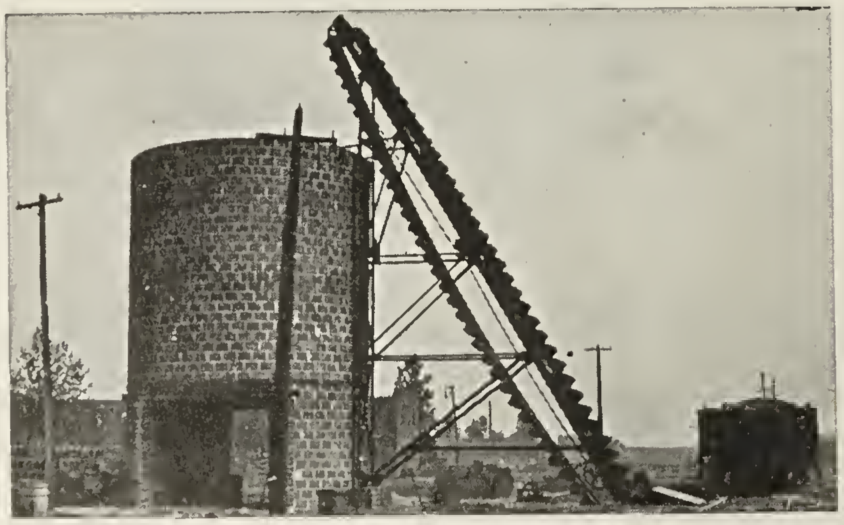
Write Today For Samples and Prices

SUNBURY
AUTOMATIC CAR UNLOADER

Loads or unloads coal at the rate of 30 to 50 tons every hour. Only one man needed.

Let us tell you what other clay plant operators are doing with the Sunbury in saving time, money, and labor.

The Sunbury Manufacturing Co.
Sunbury, Ohio



the first of the year the department has issued 6,218 permits having a valuation of $20,546,800 as compared with 5,114 permits and a valuation of $16,640,800 in the corresponding period in 1922.

MEDAL WILL PUSH FACE BRICK

Quantity production of the new types of face brick being produced at the Wooster, Ohio, plant of the Medal Paving Brick Co. is now being obtained, according to C. G. Deckman, member of the firm, following an inspection trip to the company's operating points in the state recently. The achievement of quantity production has inspired for greater distribution facilities, and outlet for the new material is being obtained in practically all sections east of the Mississippi River.

In connection with its expansion, the Medal is making some changes and additions to its organization. Among these is the appointment of J. Kent Hammer as manager of Cleveland district sales in face brick. Mr. Hammer is well known thruout the building industry in the Cleveland district as well as with the distributing trade, having been head of the Cleveland Brick & Fireproofing Co. for a considerable period.

POCONO BRICK CO. STARTS WORK

Operations have been started at the Pocono Brick Co., of Henryville, Monroe County, Pa. Orders are on hand to keep the plant running several months.

FISCHER PLANT IS BUSY

W. W. Fischer, of the Fischer Lime & Cement Co., Memphis, Tenn., who is also interested in the Herbert-Fischer Brick Co., reports big trade both in common and face brick. At the Herbert-Fischer company a special display on the second floor of the completed home is one of the most comprehensive brick displays to be seen in the South. The brick manufacturing plant in South Memphis has installed a great many mechanical devices. Engines, derricks, loading and unloading devices of every character and motorized truck delivery system that reaches all parts of Shelby County over the good graveled roads, make the plant very efficient.

PREWIT PLANT MAKES IMPROVEMENTS

Since adding new kilns, the Standard Brick Co., of Prewit, Tex., has a capacity of 40,000 brick daily. A new office building and commissary are to be built in the near future. Five new brick residences for the plant employes are now in the course of construction.

CO-OPERATION BUILDS A HOUSE

When labor and capital get together, something good always results. At Spokane, Washington, the Washington Brick, Lime & Sewer Pipe Co. furnished the brick and superintended the construction of a four room bungalow for the Home Builders' Exposition, held October 15 to 20. The bricklayers' union donated the labor. Other firms donated the plumbing, electrical work and fixtures, and furnishings, making altogether a beautiful object lesson.

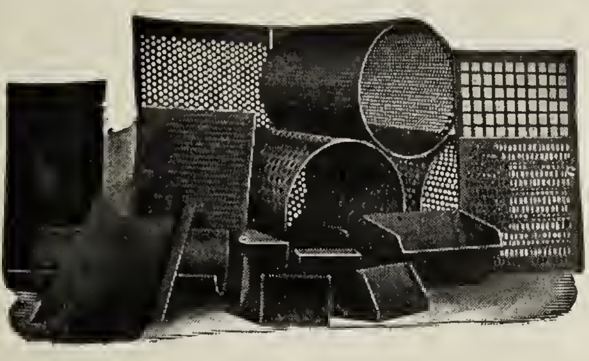
POTOMAC POTTERY BUILDING KILNS

The Potomac Pottery Co., of Keyser, W. Va., will construct an addition to its plant, three kilns will be installed, doubling capacity.

WHEELING PLANT MAKING ADDITION

The Wheeling Tile Co. is pushing the work on the addition to its present plant at Wheeling, W. Va. While this addition is under construction, large kilns are also being built.

HENDRICK SCREENS
FOR ALL PURPOSES



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STACKS, TANKS,
GENERAL SHEET and
LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL
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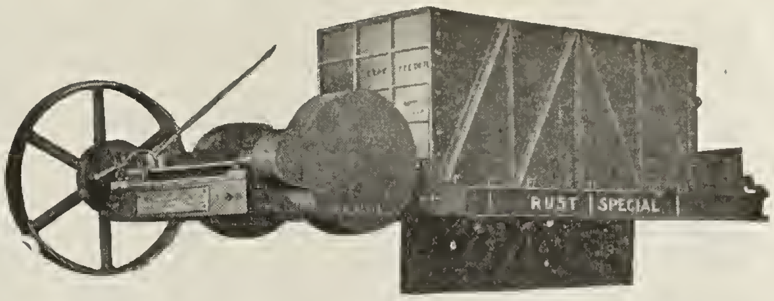

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with the
MARION
"RUST SPECIAL"
Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing Rust Feeder and full line of Marion clay plant equipment.

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MARION, INDIANA

Every rail that Foster sells is guaranteed to be straight, of uniform section, and free from defects and deformations. Material not found to be as represented may be returned at our expense.

Buy your rails and track equipment from Foster—because they are guaranteed.

1 Ton or a Thousand

New and Relaying Rails, Frogs, Switches, Splice Bars, Bolts, Nuts, Spikes, Tie Plates, Rail Braces, Drills and Saws.

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YOUR PHONE, WIRE OR MAIL INQUIRY GIVEN IMMEDIATE ATTENTION

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ROBERTSON-PEASE CO.
CENTURY BUILDING CLEVELAND, OHIO.
ENGINEERS

We offer our services, as your engineers, on the design or construction of:

Tunnel Kilns.
Periodic or Compartment Kilns.
Insulation of Existing or New Kilns.
Fuel Systems.
New Plants and Re-Conditioning of Old Plants.

Special Installations for your particular product.

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ROBERTSON-PEASE CO.
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THE MINTER SYSTEM

200 Lbs. Coal per Ton of Ware

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. Saving first cost of 6 tunnels and equipment.

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

DON'T BUILD BEFORE YOU KNOW

The Minter System Plants are Producing the Cheapest Building Material made in America today.

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HOME OFFICE
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BAIRD
PUG MILL

BAIRD PUG MILLS are giving excellent service in potteries of every description, domestic and foreign plants included. Special features consist of Bessemer steel body, square shaft equipped with cast steel blades, sturdy construction thruout, initial cost and upkeep exceptionally low.

ANDREW BAIRD
Designer - Manufacturer - Pottery Machinery
409-10 Burns-Gray Building, Detroit, Mich.

WINNIPEG COMPANY CHANGES NAME

The name of the Winnipeg (Man.) Brick Co., Ltd., has been changed to the Winnipeg Brick & Fuel Co., Ltd.

WILL REBUILD BURNED PLANT

Toronto (Ont.) Brick Co., Ltd., will rebuild the plant at Swansea, Ont., recently destroyed by fire.

BUILDING DRAIN TILE PLANT

James Cooper, Walkerville, Ont., is erecting a drain tile plant with six 28 foot kilns at Bell River, Ont., it is said.

INCREASES CAPACITY—NEW KILNS

During the past year the Milton (Ont.) Pressed Brick Co., Ltd., has greatly increased their capacity. New equipment has been added and new kilns have been built.

STANDARD BRICK CO. IS NEW CONCERN

A provincial charter has been granted to the Standard Brick Co., Ltd., Montreal, Que., with a capital of $90,000 to manufacture brick, tile, sewer pipe and other similar products.

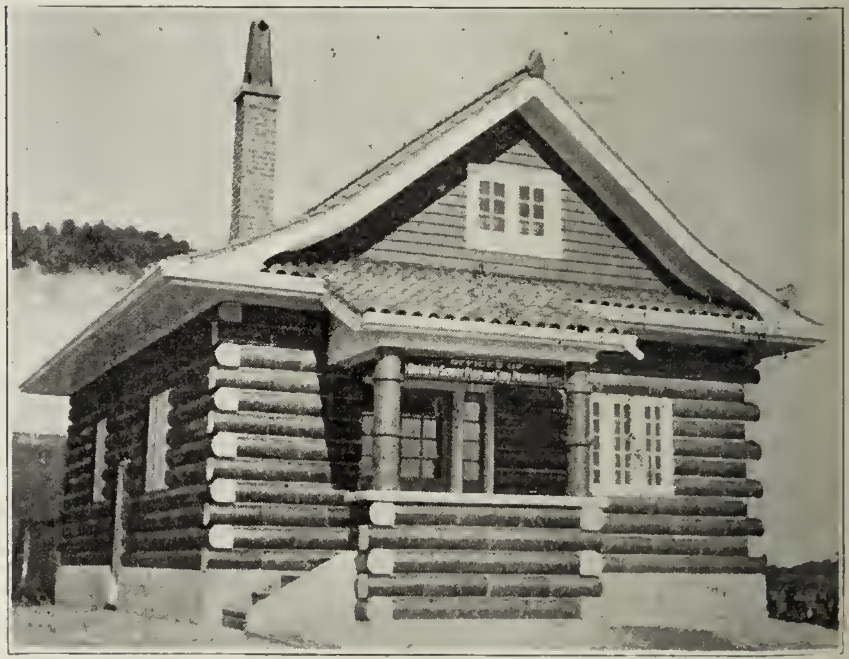
CANADIAN BUILDING FIGURES RISE

Canadian construction contracts for October had an estimated value of $30,078,100 in October, an increase of $5,807,800 over October last year. Figures for the first ten months of the year show new building having an estimated valuation of $277,144,600 as compared with $237,917,500 for the same period last year, being an increase of $39,197,100.

A CLAY PIPE "LOG CABIN"

An absolutely new and novel type of construction has been adopted by the Ontario Sewer Pipe & Clay Products, Ltd., in the construction of their new office building at Mimico, Ont. The company's product, sewer pipe, specially molded with three flat sides, was used in the wall construction, giving an excellent imitation of the old fashioned rustic log building, with the added advantage of absolute fireproofness and economy of construction.

The pieces are made in two designs. One is the ordinary wall section, and on the other is a special section with partly closed end used at door and window openings. The pipe is made in three lengths, the full size section being about 30 inches long, and the others half and quarter sections of this. Difficulty was experienced by the manufacturers in entirely closing the end of the pipe for corner sections, as it warped



A "Log Cabin" Office Built Out of Specially Molded Sewer Pipe

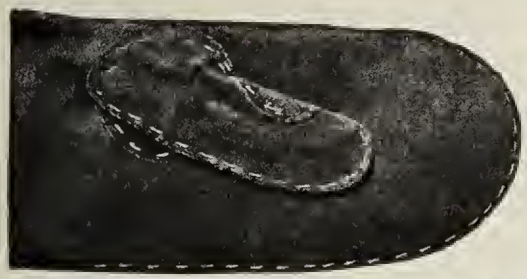
No. 305
$4.25 per Doz.
$48 per Gross Pair

Save Injuries Increase Production

When the thought of danger is removed, the daily production per man is increased.

Outfitting your men with proper hand protection is a small item compared with the loss of time and compensation you suffer if you don't.

DES MOINES GLOVE & MANUFACTURING CO.
DES MOINES, IOWA



No. 300, $7.80 per doz. $90 per Gross Pair

FREE

To any manufacturer whose men have not been using Des Moines Hand Pads who will clip out the Hand Pad shown here and mail it to us with his letterhead we will send FREE a pair of Des Moines Pads.

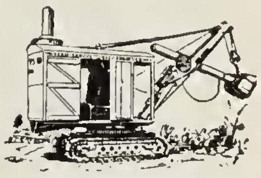
"WITH ONE MAN and one ERIE Shovel, we easily get out 300 cubic yards per day. This is sufficient to take care of the daily output at each of our 3 plants, but we could easily increase this output if necessary. In our opinion, the ERIE is *the* shovel."—*Edw. T. Conley, Sec'y, Bradford Brick and Tile Co., Bradford, Pa.* (Owners of 3 ERIES.)

For larger output than the above—500 to 600 cubic yards per day, or more—it is advisable to use two men on the shovel. But when your plant requirements are not too great an ERIE and one man will serve.

We will be glad to send you data showing just what you can do with the ERIE. Write us.

ERIE STEAM SHOVEL CO.
Formerly Ball Engine Co.,
Erie, Pa., U. S. A.

Builders of ERIE Steam Shovels and Locomotive Cranes



ERIE Shovels can be had with broad tired traction wheels, standard gauge car wheels, or on ERIE lubricated caterpillar type mounting. All interchangeable on the same truck frame.

ERIE Revolving Shovels ERIE Steam Shovel

Here Is The New

OSGOOD

1¼ Yd. HEAVY DUTY

Steam Shovel Buyers have been asking us for a 1¼ Yard shovel having embodied in it OSGOOD Design and Quality.

OSGOOD 1¼ Yard HEAVY DUTY is here to meet this demand.

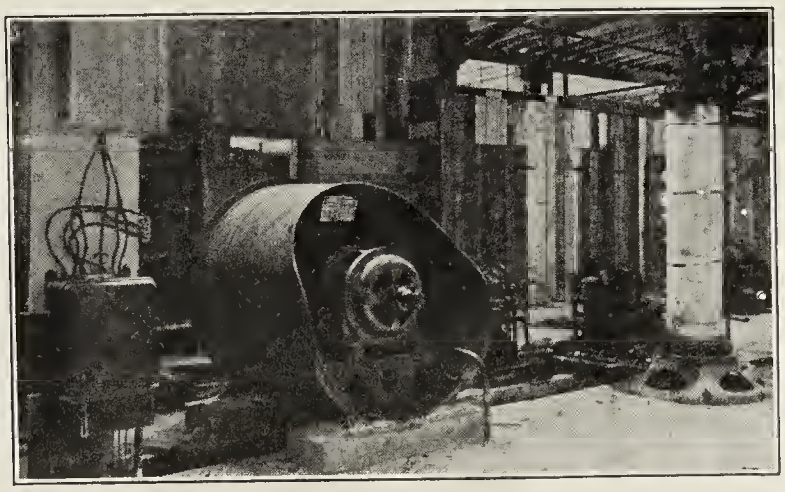
You will like this 1¼ Yard Heavy Duty when you see it. Get our new Bulletin 236, just off the press, for detailed description.

¾—1—1¼ Yard Revolving Steam Shovels, Clamshells and Draglines.

1½ to 6 Yard Railroad Type Steam Shovels.

The OSGOOD Company
Marion, Ohio, U. S. A.

Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

Ask for information regarding T-J System of Burning Oil.

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Furnace Engineers Established 1898

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New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis

Nuttall

Nuttall Facilities

We can cut spur gears in any material, from ¾-inch minimum to 360 inches maximum diameter, any pitch up to 6-inch.

Bevel Gear Limits—1-inch minimum to 192 inches maximum diameter, any pitch up to 6½-inch.

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Nuttall

badly and fell away from the body of the pipe during the burning. Quite a simple and satisfactory method, however, is to close the ends with concrete, as has been done in the corner sections of this building.

The flat side of the pipe which forms the interior walls is grooved to receive an interior finish and in this particular case a rough stucco finish coat was applied directly to the interior surface of the pipe.

From an architectural standpoint, the possibilities for this type of construction would appear to be limited to the low type of building, such as railroad stations, summer hotel buildings and residences in some cases.

The building illustrated has just been completed by the Ontario Sewer Pipe & Clay Industries, Ltd., and contains two large public offices and three smaller private offices, with toilet on the main floor. The roof is in keeping with the general handsome appearance of the building, being of Spanish red tile. Sewer pipes were also utilized in the construction of the veranda posts. The flooring of the porch and of the entire interior is of red quarry tile.

Andrew Dods, president of the company, is solely responsible for the introduction of this new type of construction and has taken out patent rights on the manufacture of the block.

INTERPROVINCIAL AN UP-TO-DATE PLANT

The Interprovincial Brick Co., Ltd., of which F. B. McFarren is manager, is manufacturing face brick in a railroad tunnel kiln at its Cheltenham, Ont., plant. The plant is also equipped with an automatic fuel handling equipment capable of handling 50 tons of coal an hour into storage bins, which discharge the coal into carts for distribution around the kilns. Electric power is used thruout with individual drives for each machine and practically no belts, excepting elevator or conveyor belts, are used.

Owing to the location of this plant, it has been necessary to build a number of workmen's cottages, which are largely six roomed dwellings, with electric light, water supply, and so forth, which are supplied to the employes at a moderate rental. The company employs a chemical engineer to test the shales and coal to insure a uniform product. The burning range of Canadian shale is a very narrow one, it is said, owing to the impurities invariably met with in that country.

Mr. McFarren states the charges for repairs and renewals on the plant to be equivalent to approximately ten per cent. of the company's fixed assets yearly.

Machinery and Equipment

Devices and Methods, New and Old Concerning Which Information of Interest to the Clay Manufacturer Is Published

CROW JOINS WITH DEAVITT LAB.

Waller Crow, Inc. of Chicago, have announced that they have joined forces with Deavitt Laboratories and will hereafter be located at 209 S. LaSalle St., Chicago, Ill. Waller Crow, Inc. will continue direct engineering service for clay plants, and the connection with Deavitt Laboratories will enable them to render better service in the future, because of the facilities which they will have for more extended laboratory investigation.

* * *

TO ISSUE CATALOG OF REAL INFORMATION

William Ganschow, president of the William Ganschow Co., is editing a new hand-book on gears and speed transformers, which will be combined with the forthcoming Ganschow General Catalog No. 100.

The purpose of the hand-book is to afford the user of gears and speed transformers easy access to formulas and data regarding their design and use. It contains much data that is usually found only in general engineering hand-books, and will, undoubtedly, be welcomed by users of this sort of equipment as a ready reference volume.

Aside from the formulas and data pertinent to gears and speed transformers, it also contains much information that is useful in the designing of machinery to which they may be applied. There are also tables showing strength and weight of materials, trigonometric functions, geometric formulas, decimal equivalents, wire and sheet metal gages, and standard screw threads, together with other miscellaneous information.

Being combined with the General Ganschow Catalog No. 100, it brings together in one volume all the information necessary for the design or specification of gears or gearing for any purpose, and shows complete lists for all products which are regularly manufactured by the William Ganschow Co.

The Ganschow hand-book catalog No. 100 is to be distributed gratis to all who use such materials as are described in the hand-book. Anyone interested in securing a copy of this volume may write to Brick and Clay Record and we will endeavor to obtain copies for them.

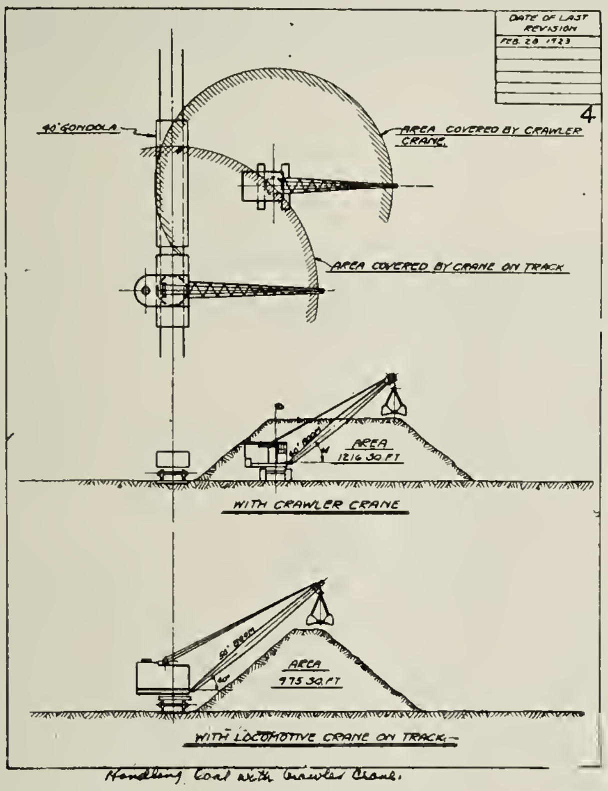
* * *

HANDLING COAL WITH CRAWLER CRANE

C. R. Dodge, Northwest Engineering Co.

We know that a large expense in power plant and kiln operation is incurred by the costs of coal handling.

All plants, either large or small find it advisable to store coal within the plant in greater or lesser quantities in order to insure having fuel on hand at all times. In small plants the quantity stored would probably be sufficient to supply the plant for several months. In large plants where daily consumption is extremely large, outside storage space must be maintained.


DATE OF LAST REVISION
FEB. 20 1923
4
40' GONDOLA
AREA COVERED BY CRAWLER CRANE
AREA COVERED BY CRANE ON TRACK
AREA 1216 SQ FT
WITH CRAWLER CRANE
AREA 975 SQ FT
WITH LOCOMOTIVE CRANE ON TRACK.—
Handling Coal with Crawler Crane.

Comparative Efficiency of Crawler Crane and Locomotive

In both cases the coal must be handled several times before it is consumed—and the ashes removed.

This gives rise to the question, which of the many methods, now more or less successfully used is the most economical and the least likely to cause trouble?

Many large concerns have worked out their own schemes

ATLAS
EXPLOSIVES
for quarrying

IN practically every kind of quarry blasting Atlas Ammite will do better work—and at less cost. Furthermore, as Ammite will not freeze, its use saves the time and labor that are lost in thawing ordinary explosives. Let the Atlas Service Man help you determine what grade of Ammite will save the most money for you.

AMMITE
—cannot freeze—

ATLAS POWDER COMPANY
WILMINGTON, DELAWARE

Branch Offices:
Allentown, Pa.; Birmingham, Ala.; Boston, Mass.; Charleston, W. Va.; Chicago, Ill.; Des Moines, Iowa; Houghton, Mich.; Joplin, Mo.; Kansas City, Mo.; Knoxville, Tenn.;

ATLAS EXPLOSIVES

Branch Offices:
McAlester, Okla.; New Orleans, La.; New York City, N. Y.; Norristown, Pa.; Philadelphia, Pa.; Pittsburg, Kans.; Pittsburgh, Pa.; Pottsville, Pa.; St. Louis, Mo.; Wilkes-Barre, Pa.

"HURRICANE" DRYERS

TUNNEL DRYER FOR INSULATORS

Cut Your Drying Time

Reduce Costs Save Space
Produce Better Ware

Drying is one of the most important processes in the ceramic industry. To dry evenly, without spoilage the finest ware and do this at the lowest cost is a thing every up-to-date manufacturer is striving to do.

"Hurricane" Dryers are doing these things every day for their owners.

One customer says, "We have cut our drying time on large electric insulators from 8 days to 48 hours," another, "We are cutting our sagger costs 50% to 75%."

May we show you the opportunity of savings in your plant?

Mangles Stove Rooms
Electrical Porcelain Dryers
Sagger Dryers Tunnel Dryers

Catalogs on request

THE PHILADELPHIA
DRYING MACHINERY COMPANY
3351 Stokley St. Philadelphia, Pa.

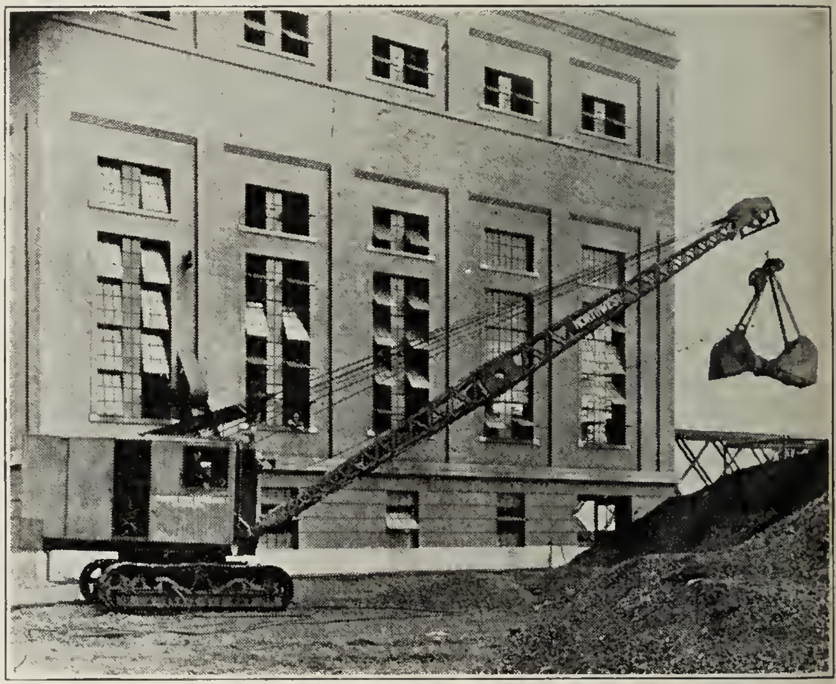
Western Agency:
1814 Cont'l Bank Bldg.
CHICAGO, ILL.

Canadian Agency:
Whitehead, Emmans, Ltd.
MONTREAL and HAMILTON

for the solution of the problem, others have spent huge sums of money for overhead rigs, long belt systems good for only the one operation of carrying coal to the bunkers, screw conveyors, high priced locomotive cranes and gantry cranes, overlooking entirely the fact that there is such a thing as a crawler type gas or electric crane with a ¾ yard or one yard clamshell bucket.

The problem is the unloading of cars to the storage pile, transferring the fuel from storage pile to the bunkers or kilns and then removing the ashes from the pits, and this the crawler crane will do, efficiently and quickly.

Let us make some comparisons. The gasoline or electric crawler type crane brings with it a freedom from the evils of steam, as compared with the locomotive crane. The fire hazard is eliminated. Trouble with boiler tubes, the result of bad water and scale and the danger of freezing in winter is entirely done away with. There is no smoke or dirt, no ashes to rake out or fires to draw, no time lost on stoking or taking water, no need for a watchman and because of its simplicity the element of human carelessness need not be considered—thus upkeep is greatly simplified and upkeep costs reduced.



Northwest Crawler Crane Handling Coal at an Industrial Plant

Besides being highly expensive, overhead trolleys, gantry cranes, stationary cranes and locomotive cranes lack the mobility which the crawler type machine supplies.

Take for instance the locomotive crane, or any of the other types mentioned above. They must be of great size or they are confined to a limited area, that space within reach of the boom from the rails on which they run. The locomotive crane must unload coal cars from the end or from a track parallel to the cars being unloaded. If the former, the car must be switched out of the way as soon as it is emptied necessitating extra work and a loss of time, if the latter one track must be kept open for the operation and movement of the crane. Similiar troubles are encountered in the use of aerial rigs and trolleys.

On the other hand the crawler type machine goes anywhere, climbs piles, unloads from any position and switches cars, one manufacturer claiming that due to the special steering mechanism which allows full traction on both treads even while turning, his machine will move as many as ten cars with ease.

There are many other uses to which such a machine may be put; by the substitution of a hook block for the bucket converting it to a standard crane, the moving of heavy materials or equipment is possible, making it more than a mere handler of coal.

SCHAFFER

S E CO E

If An Architect Guessed —or Estimated

WHEN it came to figuring loads and designing structures, we'd live under very hazardous conditions and in slipshod homes.

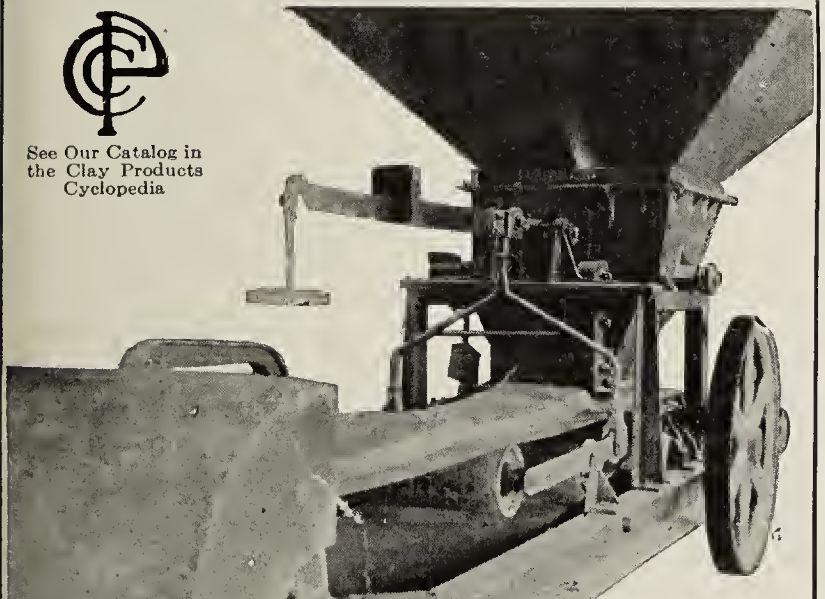
When you guess or estimate your clay mix, you run the chance of the mix's being too "short" or too "fat" and the drying and burning's claiming a huge loss.

Install the Poidometer. It feeds as it mixes, all automatically.

Write for details today

Schaffer Engineering & Equipment Company
2828 Smallman Street
PITTSBURGH, PA.

See Our Catalog in the Clay Products Cyclopedia



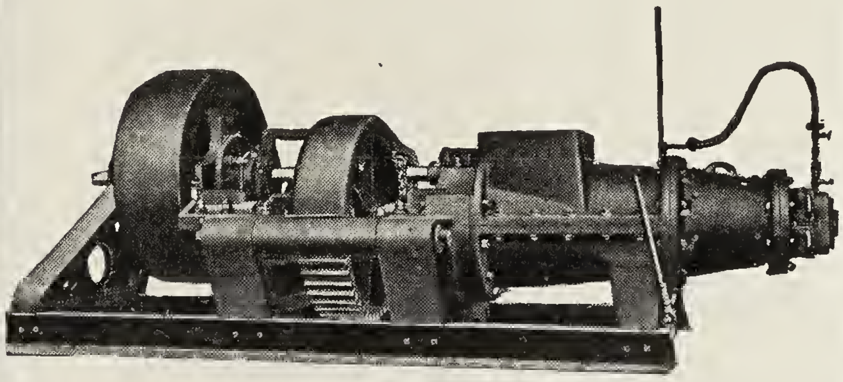
POIDOMETER

Keep Up-Keep Down

With the Freese system of slow-running gearing, now used on all Freese machines, the desired auger speed is obtained without the use of fast-running gears.

By eliminating all fast-running gears, vibration, noise, power consumption, and repairs are reduced to a minimum.

The Model GC Auger Machine, here illustrated, has but two gears, neither running faster than 125 RPM. Naturally it is a quiet, smooth-running machine—and naturally, too, it is economical in repairs and power.



Model GC Auger Brick Machine

E. M. Freese & Company
Galion, Ohio

Dependable Machinery of Proven Efficiency

NATURE SUPPLIES

the right materials to meet existing conditions. The sharp branches of the jungle do not scratch the skin of the tiger, nor do the cold winds of the North injure the polar bear.

Excessive repair expense and long delays do not arise when you apply the proper steel to your machinery parts. Advise us of the conditions under which the parts operate—having had more than 180 years' experience in the iron and steel industry we believe we can be of service in the solution of your problems.

Mail coupon for our free booklet — "Putting the Right Steel on the Job."

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HIGH BRIDGE, N. J.

Service Dept.,
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Gentlemen:
Without obligation on my part, please mail me your booklet, "Putting the Right Steel on the Job".

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Address.............................

MAIL COUPON TO-DAY

Among Our Advertisers

Details Concerning New Models, Changes in Personel, News Matters, etc., That Our Advertisers Believe Will Interest Our Readers

Waller Crow, Inc., of Chicago, have announced that they have joined forces with Deavitt Laboratories and will hereafter be located at 209 S. La Salle Street, Chicago, Ill. Waller Crow, Inc., will continue their direct engineering service for clay plants, and the connection with Deavitt Laboratories will enable them to render even better service in the future, because of the facilities which they will have for more extended laboratory investigation.

⁂

The Stevenson Company of Wellsville, Ohio, the well known manufacturers of dry and wet pans, sewer pipe presses, crushers, sewer pipe trucks and similar equipment, have just announced an addition to their sales representatives in the person of Harold Copping. He will have headquarters at Denver and cover the territory east of Salt Lake City.

The Stevenson Company, in addition to Mr. Copping, has B. F. Townsley at Toronto, Canada, and E. W. Dow, Room 248, Russ Bldg., San Francisco. These three with the branch in the Monadnock Block, Chicago, and the main office at Wellsville, Ohio, will enable the Stevenson Company to reach every point in the country in the least possible time and thus introduce their equipment advantageously.

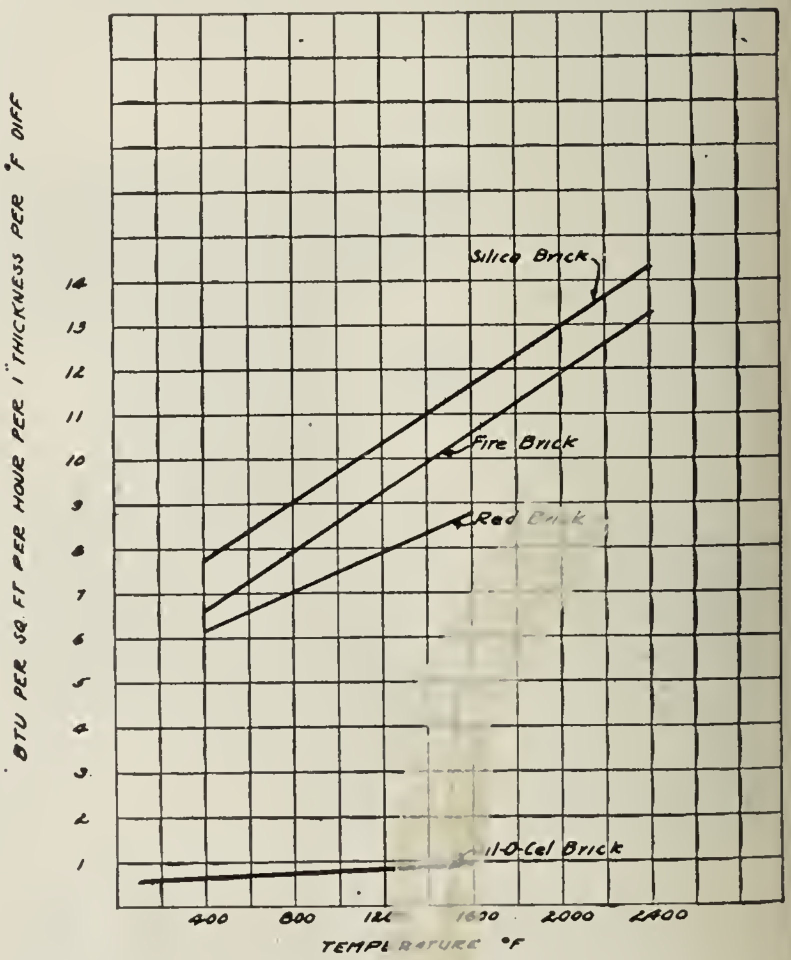
⁂

NOVEL METHOD OF DISTRIBUTING DATA

The Celite Products Co. of Chicago have recently instituted a novel method of distributing engineering data on their heat insulation products. For the convenience of engineers who may use that form of engineering data, they have reproduced many of their blueprints and charts in Lefax size sheets, punched and ready for insertion in standard Lefax loose-leaf binders.

These include charts showing comparative conductivities of Sil-O-Cel brick, red brick and refractories, as well as heat losses thru various wall constructions, insulated and uninsulated, and drawings showing methods of insulating such equipment as boilers, furnaces, ovens, brick, lime and cement kilns, gas equipment, glass equipment, oil stills, etc.

These "Lefax" size sheets are not intended to replace their regular literature and standard size blueprints but the number of requests received for this form indicates their popularity for ready reference purposes. Copies of these will be gladly sent to engineers on request.



Conductivity of Sil-O-Cel Brick, Red Brick and Refractories.

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

How You Will Sell Clay Products

BEFORE the cement manufacturer developed his business so that builders began to think of cement block, brick, roofing tile and other cement products—before stucco was made as popular as it is now—before the Long-Bell Lumber Co. and others began to preach the advantages of a frame house—and before the paint and varnish manufacturers put in their "Save the Surface and You Save All" campaign—there were a certain amount of buyers who purchased clay products. They represented a much higher proportion than they do now, despite the growth of this country in both population and manufacturing. The cost of selling these buyers was very small.

Clay Products Have Not Kept Pace

Altho the purchasing power of the country has increased and one would expect the sale of clay products has increased in proportion—such has not been the case. There has been a greatly increased competition for the consumer's dollar, not only from directly competitive materials but also from entirely different products such as automobiles, clothes, radios, phonographs, movies, and so forth. Merchandizing has become a matter of most intense competition between industries.

What has this meant? It has meant that the clay manufacturing business is meeting increased sales resistance. That the cost of selling has increased tremendously and in much greater proportions than has the cost of production.

Values of Commodities

Commodities have two values—price and utility. By utility we mean its advantages and disadvantages for any purpose. The product of these two values determines whether or not one commodity is better suited than another. This is true in fact and were everyone able to compare objects this way, judicious purchasing would always prevail. However, the difficulty lies in the ability of purchasers to weigh properly the utility of a product. That, however, is where advertising comes into play.

Commodities of inferior quality have often been succcessful because the buyer knew more about the good qualities and less about the poor qualities than he did of a competing, but superior, product. The advertising of the inferior product was a third factor in the selling. Hence we have the product of price times utility times advertising as a measure of the tendency of the consumer to buy.

Where Manufacturers Fail

Now, however, all that the above does is to create desire for a product. **It does not sell.** Here is where most manufacturers fall down. They are idealists when it comes to figuring how the other fellow will buy. It is strange how a manufacturer will be extremely skeptical when it comes to accepting proven and modern methods of production, but will, on the other hand, expect the world to fall at his knees without effort on his part because he has a good product.

A fourth factor in the sale of a product then is contact between the consumer and seller. This contact may be thru salesmen or dealers. The product must be explained more fully than the advertisement can describe it and moreover, it must be displayed and made available at the moment it is desired. Contact, as we speak of it here, includes a wide range of different angles such as salesmanship, dealer representation, engineering service, and so forth. It is a factor about which most clay products manufacturers have shown least intelligence.

Prime Factors of Distribution

Thus the product of price, utility, advertising and contact are prime factors in distribution. Quality and service are often mentioned, but these two elements are included in the above factors as the reader who has studied this subject readily understands.

This brings us to a point which we want to discuss. The other day a man who lived in a suburb of a certain large city wanted to buy some face brick. He liked a certain kind of face brick and went to the local dealers for it. None of these dealers, however were able to get the brick because the manufacturer had given a dealer in the large city a large territory which included the suburb under discussion. The suburban dealer therefore sold another type of face brick to his prospect and the manufacturer lost out while the consumer had been converted from his first love.

Lack of Contact

The above story illustrates lack of proper contact. The answer is found in a great number of agencies where brick are readily available to the consumer.

Here is another interesting point. In a September issue of Brick and Clay Record the section devoted to current prices reported a delivered on the job price of $30 per M for common brick in a certain city in New York. A manufacturer in a nearby state wrote us that he had made a trip to this city and found that manufacturers were selling brick at $16. We immediately got in touch with the dealer who quoted us the price and this was his reply:

"The price we have been putting on the price lists for brick was the price we charged for them as we do not pay any attention whatever to what the local yards charge. We are not brick manufacturers so have to buy our brick out of town and ship them in here. We are now paying $16 per M at the yard, plus about $2 per M freight and after handling these brick out of the car onto the pile and then loading them back on to a truck and delivering them at the job, we cannot afford to sell them for any less than $27 per M. This is what our price of $30 really amounts to to the contractor after we give him ten per cent. off from our standard list price.

"There are three small brick yards here in town that have brick during the summer months and I believe that they have been selling brick this season at prices ranging from $18 to $20 per M according to where the brick had to be delivered, but I have not known of their selling any at $16. Some of our competitors here buy brick at Mechanicsville, Cohoes and Crescent at $16 per M at the yard, haul them from anyone of these places to the jobs here and sell them at $20 per M, but we cannot afford to do this and we know it. The other fellows cannot afford to do it either but they do not know it.

"The nearest haul would be from Cohoes, which would be about eight to ten miles from the yard to the job. The next shortest haul would be from Crescent, which would be from 13 to 15 miles from the yard to the job and Mechanicsville would be from 20 to 22 miles from the yard to the job. I have not known of any of these Crescent, Cohoes or Mechanicsville yards selling any brick this season at less than $16 unless they were kiln run or No. 2 brick and these we do not buy as we find that their No. 1 brick, by the time they are shipped in here and handled on to the pile, back on to a truck and to a job, are bad enough. I was talking with a brick manufacturer from down the river a couple of weeks ago and he told me he had not sold any this season under $20 per M delivered on boats at his dock and practically all of his brick go to New York City.

"If you would prefer to have us omit common brick when sending you prices we shall be glad to do so and you can get price on these from some of these local yards, but as the local yards are open ones, they can only make brick from the time that nice weather starts in the spring until bad weather starts in the fall and cannot make any during the rainy season in the summer. The result is that they are unable to furnish brick during the winter and early spring. The manufacturers in the surrounding towns who are much larger than the local manufacturers realize this and accordingly pay no attention whatever to the price made by the local yards any more than we do."

Facts About Dealer Distribution

That letter tells a big story. You might say that it is an argument against the dealer—that the price for common brick is too high when sold thru the dealer and that it would make competition with substitute products still greater. But before you go very far along this trend of thought think of the automobile business. Henry Ford, for instance, is able to sell a machine at half the price for which he once sold it because he cut production cost by mass production made possible thru wide distribution and, secondly, because he cut selling costs by dealer representation. In other words, by making his car available thru the greatest possible number of distributing agencies, he sold more cars.

Lowers Selling Cost

If all the common brick in the New York town referred to before were sold thru the dealer instead of direct, the manufacturer could sell to the dealer cheaper because his selling expense would be cut. The dealer in turn could sell cheaper because the volume of business would be greater. We don't mean to advocate that the manufacturer cannot be his own dealer. On the contrary it is only natural that he should perform this service in his own community. But there are hundreds of thousands of communities and only 3,500 brick and tile plants. What about the other communities? Can a manufacturer finance a selling organization large and complete enough to cover his territory? We don't think so. The automobile, tire, phonograph, cement, lumber, clothing and other industries didn't achieve success by that method.

A new frame or stucco house in a town 60 miles from your plant directly affects your business. One home advertises another. The owner may recommend it to a friend who lives in your city.

Because of the great competition for a man's dollar it is necessary that you have someone working for your interest to supply a prospect with service and information that he ought to have. The building supply dealer can be that person.

How Sales Are Lost

A certain party who contemplated building a residence and who was favorable to the permanent type of construction swung over to competitive construction when a local dealer who did not handle clay products told him that he could build with substitute material and buy the "Good Maxwell" for the difference in cost over a brick or tile house.

Don't you see where the clay industry is losing out by not developing an intensive distribution plan whereby each manufacturer would be represented by hundreds of dealers?

Brick and Clay Record can make no more certain prophecy than this. The clay products industry will some day come to wide distribution thru dealers.

Back Mellon Tax Reduction

Not very long ago practically all the newspapers of the country carried front page headlines about the Secretary of the Treasury, Mellon's proposal to cut the nation's tax bill. It is doubtful whether any measure of greater importance, especially to the construction industry, has been proposed within the last ten years. Construction is so basic an industry and tied in so tightly with practically all other industries of the country that burdensome taxation must make itself felt more in the building than in any other industry. Reduced taxation undoubtedly will mean better business in all lines. In view of these facts it behooves everyone connected directly or indirectly with the building industry, and this includes manufacturers of clay products, who are interested in a reduction of taxes, to bring whatever influence they can to bear upon the matter.

This is so vital a subject that every clay products man should make it his business to either write or wire to his congressman and urge the adoption of the Mellon budget. We are at the beginning of the period when most of the various associations in the clay industry will hold their annual conventions and it would be entirely appropriate, as well as a splendid help in putting this thing over, if resolutions were adopted and sent to Congress advocating and supporting the Mellon tax budget.

THE NATION'S ANNUAL TAX BILL

The nation paid last year in taxes $7,061,000,000, compared with $8,363,000,000 in 1921, $2,194,000,000 in 1913 and $1,382,000,000 in 1903, says a recent bulletin of the National Industrial Conference Board. In 1922 the taxes collected by the federal government showed a decline of $1,526,000,000 as compared with 1921. This is ascribed to the reduction of income taxes due to the low ebb of business in 1921. The total tax bill last year was $64.63 per capita, as compared with $17.07 per capita in 1913.

How Great Is Foreign Brick Menace?

New York Customs House, Department of Commerce, Foreign Consulates, New York Importers and Other Sources Combed for Authentic Data

Written After Full Investigation by Brick & Clay Record's Eastern Representative

"ASCERTAIN how much common brick has been imported into the United States this year," read Brick and Clay Record's editor's instructions to his Eastern staff correspondent.

"Leadpipe cinch," mused the latter. You can't very well bootleg brick, so it should be an easy matter to obtain at the New York Customs House the official records of brick importations for the port of New York. That would be the starting point. With these figures in hand, the other ports of entry could be rounded up in short order.

Exact Amount of Brick Importations Not Known

The chief of the statistical division of the office of the Collector of Customs was only too glad to assist. His records, however, were kept in conformity with the practice prescribed by the Treasury Department, and this practice makes it impossible to ascertain how much common brick has been imported into the United States, except by segregating each and every entry and in each entry the quantities that actually represent common brick. The New York Customs House records are kept according to classifications, and it is these classifications of the tariff law that complicate the matter.

The first of these classifications comprises those clay products which are subject to duty, ranging from 20 to 25 per cent. and in the case of magnesite brick a combination ad valorem and specific rate. This classification includes crucibles, tiles, and other products, in addition to face brick and refractories. But what Brick and Clay Record's representative was after is common brick. So we turn to Classification 593 of the Fordney-McCumber tariff act, and there we find: "Other Non-metallic Minerals" which come in free of duty and in which common brick has been incorporated. The New York Custom House records, however, do not segregate the common brick, giving merely the number of shipments from each country and their declared value or appraised value for the entire group of non-metallic minerals.

Department of Commerce Records

The Department of Commerce maintains an office in the New York Customs House. There the records for the entire United States and in segregated form might be obtained.

J. F. Carroll, Chief of the Section of Customs Statistics, of the Department of Commerce, caused to be prepared thru one of his staff the following record of common brick that was admitted free of duty to the United States during the first nine months of the current year:

1923	Quantity (1,000's)	Value
January	1,710	$15,921
February	10	436
March	Part of Mille	10
April	5,694	31,916
May	2,706	22,741
June	1,979	17,009
July	9,443	74,386
August	3,473	28,369
September	6,037	52,756
	31,052	$243,544

The foregoing figures unquestionably represent the total quantity and value of the common brick brought into the United States during the first nine months of the current year, free of duty.

Duty Now Imposed

They do not represent all of the common brick brought into the United States for the following reason:

The Fordney-McCumber tariff act provides that when any country imposes an import duty on common brick, the same rate shall be levied on all brick imported from that particular country. Germany imposes an import duty of ten gold pfennig (2.4 cents) per 100 kilogram (220.4 lbs.) on common brick. Hence the German brick that has come into this country has had to pay the equivalent duty upon entry here.

Germans Send 41,000,000 Brick

Total importations of brick into the United States from Germany during the first nine months of 1923 (all of which paid a countervailing import duty upon entry here because of the import duty on brick levied by Germany) were, according to official figures compiled by the Department of Commerce for Brick and Clay Record, as follows:

1923	Quantity (1,000's)	Value
January	No transactions	....
February	1,096	$4,934
March	1,926	12,653
April	6,165	35,619
May	9,108	50,929
June	4,110	21,850
July	5,767	41,302
August	7,781	46,433
September	5,235	25,318
Total	41,188	$239,038

It will be seen from the foregoing that importations of common brick from Germany during the first nine months of 1923 exceeded in quantity the aggregate of brick that came in free of duty, altho in value it was somewhat less, averaging $5.80 per thousand.

Correct Figures Difficult to Get

A. Purpura, sales manager of the Heinerick Corporation, 305 Broadway, New York, stated that his company had to pay an export duty on brick from Germany, and upon entering the brick here, a countervailing duty to the same amount had been imposed and paid under protest.

At the German Consulate Brick and Clay Record's correspondent was informed that an export duty had at one time been levied on German brick shipments abroad, but that this was no longer the case.

The foregoing will serve to show, however, why extensive research is necessary to enable the Department of Commerce to compile accurate records of common brick importations. This task is likely to be made all the more difficult because considerable quantities of synthetic brick have been coming in from Europe, especially from Germany, which the importers refer to as common brick. Whether they have been so entered and classified at the Customs House remains to be ascertained. Certain it is that among those who imported brick there are many who even to-day do not know the difference between a burned clay brick and the set, synthetic article. It must be borne in mind that many of those who imported brick from Germany earlier in the year were general traders bringing in a miscellany of merchandise, ranging from pins and needles up to brick and possessing no specialized knowledge of any of the lines handled by them.

Netherlands Consul's Viewpoint

At the Netherlands Chamber of Commerce in New York, affiliated with the Netherlands Consulate, the secretary, L. Wittert van Hoogland, who proved to be well posted on the brick situation, stamped as absurd the reports of hundreds of millions of Holland brick to be shipped to the United States. In the first place, Holland brick can only be used by American builders if they use none other. The Holland brick yards would no more think of changing the size of their brick, which is 2 inches thick, 4 inches wide, and 4¼ inches long, to American standard size than they would of filling in their dykes. For the Metropolitan Life Insurance Co.'s Long Island housing enterprise a large quantity of Holland brick was imported. This brick cost considerable more laid down on the job than Hudson River or New Jersey brick would have cost, but it was selected because of its strikingly different colors, which made possible its use for face brick. Last year 12,000,000 brick were brought in for the Metropolitan jobs.

There are in Holland 540 brick yards. The largest of these produce between 30,000,000 and 40,000,000 brick a year, the smaller ones between 12,000,000 and 15,000,000. There is no trust, as has been frequently stated, but there is a cooperative selling organization patterned along the same lines as the California Fruit Growers, who dispose of the output of the individual growers. Contracts with this sales organization are for one year.

Says Dutch Importations Won't Harm

Holland is a country of brick houses. Some of the most beautiful medieval palaces and castles are of brick and the Hollanders are proud of them.

"As a Hollander," said Mr. van Hoogland, "who loves his native land and who is proud of the fact that it was the Dutch who built New Amsterdam, I regret these exaggerations of brick imports exceedingly. What are a few million brick to the domestic production of the United States? Next year we will celebrate the 300th anniversary of the building of that Dutch colony from which sprung the modern New York. One or two buildings to which we Hollanders can point with pride, and say that they are built of Dutch brick, the same as was the first solid buildings in New Amsterdam, surely will not injure the American brick industry, and it will please us sentimental fellows greatly."

The present freight rate on brick from Holland to the United States amounts to $10 per thousand. It costs $5 more per thousand to lighter the brick or truck it from the dock to the job. Amid such costs, the Holland brickmakers on the rivers Waal and Ysel have not the ghost of a show to compete with American brick, if price is the sole consideration.

Underestimates Importations

At the German Consulate, the official in charge of the commercial division, said that he had heard of the absurdly exaggerated reports of German brick importations. For figures to disprove them, he would first have to write to Berlin, but he was certain that not more than 10,000,000 had been brought in from Germany this year, and that included not only "Backsteine" (baked stones, as the Germans call burned clay brick), but also "Press-steine," synthetic products, which, he said, he had noticed well represented in the backwalls of large structures, especially around Hoboken. Yes, if some one would build the right sort of sailing vessels, brick exports from Germany might be made really profitable, but with present steamship freight rates as high as they are, chiefly due to the high price of steam coal, continuance of brick imports from Germany into the United States was problematical.

Builders Grateful

The figures here published of brick importations from Germany, compiled by the Department of Commerce, show that the German Consulate's estimate of 10,000,000 having been imported into the United States in 1923 falls at least 75 per cent. short of the mark.

The "Lloyd Belge," one of the large steamship companies brought over a considerable cargo of Holland brick consigned to a New York dealer. The latter, however, failed to remit the freight charges, and the "Lloyd Belge" still has the brick and the dealer à lawsuit on his hands.

In this connection it is also interesting to note that at a business meeting and dinner of the Associated Builders of Kings County, held at Willoughby Mansion, Brooklyn, November 14, Samuel Seiderman, president of that organization said: "There is not a builder in Greater New York who does not feel obligated to the Associated Builders for its instrumentality in importing German white common brick. The price of Hudson River brick would be still skyrocketing had it not been for the great relief brought about by the introduction of this foreign brick."

72,000,000 Foreign Brick on Records

The foregoing figures show that during the first nine months of the year 31,052,000 brick came in duty free and that in that period 41,188,000 additional came in duty-paid from Germany. Undoubtedly these figures represent the major part of the import movement within that time.

These figures would seem to bear out the statement made in one quarter that 90,000,000 had come in this year, and that of these 68,000,000 had been landed at the port of New York.

Certain it is that the import movement has been greatly impeded, if not squelched for the time being, by high freight rates. Certain it is also that purchases of 200,000,000 brick abroad, a report which has been bandied about in the building supply trade recently, is devoid of probability of truth.

The fact, however, that the average price of 31,052,000 common brick imported duty-free into the United States was $7.84 per thousand, and that of 41,188,000 brick imported from Germany was $5.80 per thousand, in other words that Europe can profitably produce and ship to the port of export brick at such a figure, is sufficient warrant for American brick manufacturers taking counsel with one another as to what should be done by way of preventive measures. Moreover, the importations represent practically 10 per cent. of the Hudson River entire annual production. This adds to the seriousness of the case.

* * *

DIVIDENDS THAT PORTEND GOOD BUSINESS

The many extra dividends which have been declared within the last fortnight imply more than that the companies declaring them have recently enjoyed good business. Into the making of such disbursements goes the expectation of a reasonably prosperous future. The earnings of 1923 supply only the money; the expectations of 1924 supply the courage to let the money go.

The money aggregate of extra dividends declared since that of the United States Steel Corporation which set the pace, greatly exceeds the total of that declaration itself. The money evidence of hopes for a sound business situation has piled up. The payer of these extra dividends include businesses so diverse as a maker of heavy machinery, a refiner of oil, a producer of gypsum, a manufacturer of photographic goods, an owner of a chain of restaurants, a maker of agricultural implements and a clay products manufacturer. Not one line alone looks forward to continuous economic fair weather, but many expect it. If such dividends are declared by men in touch with the financial center as well as with their own markets, it would seem that these men had not found even in Wall Street any really ineradicable blue spots.

* * *

BUILDING PRICES REMAIN STEADY

The general volume of building material prices remained substantially the same thru October, altho there were numerous fluctuations due to seasonal, local labor and transportation influences. In some localities there were recessions in brick, hollow tile, sand and gravel, with a further softening in pig iron. Structural steel and pine timbers remained firm and unchanged. Production and new business in lumber declined, but Douglas fir prices were up slightly because of Japanese demand.

* * *

CALL NATIONAL IMMIGRATION CONFERENCE

Upwards of 2,000 of the nation's leading industrialists, public officials, leaders in business and trade organizations, and authorities on social service will meet in a National Immigration Conference at the Hotel Astor, New York, on December 13 and 14, the first session of its kind ever held. The conference, it was announced, comes as the result of long realization by leaders in industry, social service and public affairs that Congress, in enacting a substitute for the present so-called per centum limit act, which is shortly to expire, will be confronted with the determination of a policy that will be vital to the social life and institutions of the country, and to the national well-being. All sessions of the conference will be public.

* * *

Court Will Not Interfere With Frisco Material Permits

Taken from Opinion of Judge Maurice T. Dooling of the United States District Court of Northern California, Published in Full in the San Francisco Recorder

THE ATTEMPT on the part of the United States government to dissolve the Industrial Association and the Builders' Exchange of San Francisco, Cal., and to abolish the permit system maintained in the building industries of San Francisco, has failed.

The following is excerpted from an opinion rendered by Judge Maurice T. Dooling in the Southern Division of the United States District Court, for the Northern District of California, in which court the case was prosecuted.

The Court Decision

"This is an action in equity to restrain the defendants from further executing an alleged conspiracy in restraint of interstate and foreign commerce and to dissolve certain of the alleged conspirators for the more thoro attainment of the objects of the suit. The defendants named are about 40 in number, among them the Builders' Exchange and the Industrial Association of San Francisco, together with corporations, individuals and partnerships belonging to each."

The following situation prevailed: 1. A concert of action to maintain the American plan. The American plan contemplates the employment of union and non-union men in equal proportions with a non-union foreman on each job.

2. The use of the permit system as a means to that end. Under this system no one can purchase the building materials covered thereby without obtaining a permit from the permit bureau of the Builders' Exchange and no one can secure such permit who will not pledge himself to run his job on the American plan. Under the permit system were first placed cement, lime, plaster, ready-mixed mortar, rock, sand and gravel, common brick, fire and face brick, terra cotta and all clay products.

Objectionable Activities

3. The placing under the permit system of articles not manufactured or produced within this state, but which come in interstate commerce from without the state. Plumbers' supplies which are manufactured for the most part without the state, while not directly under the permit system, were just as effectively dealt with by the simple process of refusing to grant a permit to purchase other materials which came under the permit system to anyone that employed a "bad plumber," that is to say, one who was not operating under the American plan.

However little intended to interfere with interstate commerce, as claimed by the defendants, the result of their concerted action is such an interference therewith as under the Sherman Act cannot be tolerated. The court, however, has no desire to go further in curbing their activities than the protection of such commerce requires.

"Defendants Will Not Be Dissolved"

The defendants will not be dissolved nor their general activities interfered with, but a decree will be entered enjoining them from requiring any permit for the purchase of materials or supplies produced without the state and coming there in interstate commerce, or for making as a condition for the issuance of a permit any regulation that will interfere with the free movement of plumbers' or other supplies produced without the state. They will also be enjoined from attempting to prevent or discourage any person without the state from shipping goods to any person whatever within the state.

If this decree be complied with in good faith by defendants, their other activities will not be disturbed, but to insure such compliance the court will reserve the right hereafter so to modify the decree to be entered as to include the dissolution of certain of the defendants, if such dissolution be necessary, and the plaintiff will be accorded the right upon a proper showing to apply for such relief at the foot of the decree.

Court Approves Permit System

This means, so far as the United States courts are concerned, that the Builders' Exchange can continue in the operation of its effective permit system with the design to protect the American plan in the building industry of San Francisco, insofar as it does not interfere with the sale of material coming from without the state to purchasers within the state.

In May of this year 34 building material dealers, who have been prosecuted in the courts of San Francisco for declining to sell materials to contractors who had not supported the American plan, were acquitted.

* * *

TILE ASSOCIATION GIVES ADVICE ON "ADS"

The Hollow Building Tile Association is ready and willing to advise any member on his advertising or sales problems. Three schedules have already been prepared for members in Iowa, Missouri and Ohio, two of which will undoubtedly start on the first of the year. In addition requests for assistance have been received from another Iowa manufacturer and also from a manufacturer in Ohio.

A Panoramic View of a Section of Los Angeles. Modern Buildings, Progressive Businesses Characterize the City

C. B. M. A. to Swarm to Los Angeles

Trainloads of Manufacturers and Friends to Make Pilgrimage to the Golden West—Better Join the Happy Crowd

LOS ANGELES, the magic lure which has drawn countless thousands from all parts of this country, has issued the same irresistible call to the common brick industry of America. With its balmy, tropical climate, the romantic spirit which is goddess to the city, its perpetual sunshine, coupled with an amazing progressiveness on the part of its citizens—a progressiveness which is manifested also in the clay industry there—Los Angeles might well be called the Wonder City.

The Awe Inspiring Carriso Gorge. One of the Wonders to Be Viewed by the Common Brick Party. An Idea of Its Size Can Be Gained by Comparing the Train Above the Center of the Picture with the Gorge

Somewhere in the hearts of all of us who have never been there, there lurks a desire to visit and "experience" the most talked of city in the world. This desire can this year be realized by the common brick manufacturers and their friends, thanks to the effort on the part of the Los Angeles manufacturers and the hard work of the Common Brick Manufacturers' Association's headquarters at Cleveland. As probably everybody connected with the clay industry knows, this association will hold its annual convention in Los Angeles, February 11 to 16, 1924.

The trip to the West Coast should be made the occasion of a vacation and holiday which the brick men certainly owe themselves. Never before and probably never again will there be an opportunity to see Los Angeles and a great many other interesting places between Chicago and the Coast for a price as low as that made possible by the Common Brick Manufacturers' Association. According to Charles A. Bowan, assistant to the president of the association, the entire trip, starting from Chicago February 2 and, with numerous stopovers, arriving at Los Angeles February 10, will not cost over $700 for a man and his wife. This price, railroad officials say, has never been equaled, and the same trip under ordinary circumstances could not possibly be made for less than $1,000. The $700 also includes the return trip.

Positively No Reservations after December 15

Reservations for railroad accommodations on the trip to Los Angeles will positively close December 15. No reservations will be accepted after that date, nor can anyone be permitted on the train unless his application was received on or prior to December 15. This decision is final and no exceptions will be made.

In order to make sure that there would be no mistake about the date, Charles A. Bowan, assistant to the president of the Common Brick Manufacturers Association and who is in charge of the trip to Los Angeles, called Brick and Clay Record in Chicago from Cleveland by long distance telephone on eve of going to press and explained to the editor the importance of all brick men getting their reservations in on time. This is a warning, therefore, not to delay in sending in your reservations.

The trip will be a beautiful one in every way, but it also will be profitable in every way. A glance at the itinerary, going and returning, will show that none of the places of

This Is the Itinerary, Los Angeles and Return

Going

February 2—Leave Chicago.
February 4—Arrive Denver.
February 5—Leave Denver.
February 5— Royal Gorge.
February 6—Arrive Salt Lake City.
February 6—Leave Salt Lake City.
February 6—Arrive Ogden.
February 7—Leave Ogden.
February 7—ENROUTE
February 8—Arrive Port Costa.
February 8—Leave Port Costa.
February 8—Arrive Oakland.
Party ferried to San Francisco.
February 9—Leave San Francisco.
February 9—Arrive Big Trees.
February 9—Leave Big Trees.
February 10—Arrive Santa Barbara.
February 10—Leave Santa Barbara.
February 10—Arrive Los Angeles.

Returning

February 18—Leave Los Angeles.
February 18—Arrive San Diego.
February 18—Leave San Diego.
February 18— Carriso Gorge.
February 19—Arrive Phoenix.
February 19—Leave Phoenix.
February 19—Arrive Fish Creek.
February 19—Arrive Globe.
February 19—Leave Globe.
February 20—Arrive El Paso.
February 20—Leave El Paso.
February 21—Arrive San Antonio.
February 21—Leave San Antonio.
February 22—Arrive Dallas.
February 22—Leave Dallas.
February 23—Arrive Chicago.
February 23—Arrive Kansas City.

interest along the way are being overlooked and stopovers are arranged at some of the places which are especially desirable. The first real stop will be Denver, from there thru the Royal Gorge, a place of wondrous scenic beauty; thru the famous Mormon stronghold, Salt Lake City; past various other interesting places along the way to San Francisco and the Big Trees, nature's most majestic living monuments; then along the coast thru Santa Barbara to Los Angeles.

The return trip will, if anything, be even more interesting and wonderful. The southern route will go thru San Diego and the Carriso Gorge which, as the picture here shows, is a tremendous chasm of awe-inspiring depths. Phoenix, El Paso, San Antonio and Dallas will be visited and the party welcomed by local members of the brick fraternity. At these cities automobiles will be waiting to take those of the party who desire over such famous places as the Apache Trail to the Cliff Dwellers section, to the Roosevelt Dam and some of the great gold and copper mines. The trip will end at Kansas City and Chicago on Saturday, February 23.

Practically everybody of any consequence, it seems is planning to make the trip. It is certain that there will be at least two train loads out of Chicago and possibly three, and one full train from Kansas City. The Chicago party will in all probability number between 80 and 100, the bulk of whom will be the Illinois Brick Co.'s bunch. William Schlake will again send to the convention all of the superintendents of his many plants and according to present indications these men will be accompanied by their wives.

It is interesting to see that an organization managed by long-headed business men like that of the Illinois Brick Co., thinks a convention of common brick manufacturers is of sufficient value to send its superintendents even tho the total cost of sending all these men all the way to the coast is considerable. If it is worth a superintendent's while to go certainly it should be worth while for brick manufacturers themselves to go. The Illinois Brick Co.'s party will consist of probably 50 persons.

Just about a half hour's ride from the heart of Los Angeles at Pasadena, are located the wonderful and world renowned Busch Gardens. A small section of them is reproduced here thru the courtesy of the Burlington Railroad. These Busch Gardens are one of the sights and attractions to the Los Angeles visitors, which it is worth going many miles to see. There will be ample time for those attending the Common Brick Manufacturers Association convention to visit these gardens.

Located in a city of beautiful homes and estates, Busch Gardens are nevertheless considered as topping them all in beauty and the estate consists of 87 acres of green grass carpet kept in perfect condition. Practically every known variety of tropical plant can be found on this estate, all arranged in an artistic manner to produce an effect of startling beauty. Visitors are welcome and are permitted to go thru the grounds.

From a business point of view the convention will be entirely worth while. Daily sessions will be short but will be full of vital, practical material designed to help the manufacturer in the many troubles and problems he encounters. The industry's most progressive men will be on hand to tell of their experiences and give of their knowledge. All in all the meeting will bring out the most advanced ideas now in use thruout the country as well as offering an opportunity to discuss practical brick manufacturing from every angle.

Will See Remarkable Brick Plants

Brick manufacturers are visiting Los Angeles at a time when building activity is unprecedented and when the clay plants are straining every part of their capacity in an effort to turn out enough building materials to satisfy the builders. This construction activity has resulted in the building of some remarkable clay plants in Los Angeles—plants which are amazingly efficient and operating on an enormous scale. The Simons Brick Co., for instance, is at present turning out probably more brick than any other single plant in the entire country. Close to a half million brick are made there each working day.

The Very Heart of Los Angeles. Even the Business District Is Beautiful

Make Reservations Before December 15

So from the angle of business as well as pleasure, the convention at Los Angeles is going to surpass anything ever staged in the history of common brick. Its success is already assured in the number of persons who have signified their intention of going.

Reservations will be accepted by Charles A. Bowan, 2120 Discount Building, Cleveland, Ohio, until December 15, 1923. This is the last date upon which they will accept and it is imperative that you signify your intention of going on or before that date. Incidentally, it may be well to mention here that brick manufacturers' friends and relatives are also cordially invited and the same low rates apply to them as to the manufacturers themselves.

If anyone desires information in addition to that given here, it may be secured by writing to Mr. Bowan.

* * *

OCTOBER REFRACTORIES PRODUCTION

According to reports issued by the Refractories Manufacturers Association, clay fire brick produced during October amounted to 57,774,841, which is slightly in excess of the production for September. Shipments during October amounted to 53,316,214, which is approximately 5,000,000 more than shipped during September. The number of brick on hand at the end of October amounted to 168,782,237, which is an increase over September stocks of about 4,450,000. Unfilled orders amounted to 60,735,806. The apparent disparity between the unfilled orders figure and stock on hand is accounted for by the fact that the latter figure includes large quantities of shapes made up in advance of the receipt of actual orders and is in no sense "free stock"—that is it could not be made to apply on new orders. The actual free stock of nine inch straights on October 31 was approximately 41,000,000.

Production of silica brick for October increased almost 2,000,000 over the September figures, while shipments increased approximately 1,000,000 brick. Stocks on hand amounted to 35,210,516, which is practically the same as September. Unfilled orders amounted to 23,974,974, which is a drop from the September figures of slightly more than 2,000,000. As in the case of clay fire brick it is necessary to explain that the actual free stock of nine inch brick at the end of October was approximately 9,600,000, the balance of the stock being made up of shapes.

* * *

COAST MEN STAGING HOUSE COMPETITION

The California Common Brick Manufacturers Association has announced a brick house competition. The association is offering prizes amounting to $1,000 for the best designs for brick houses to cost not more than $7,500 when completed. The contest is being staged under the auspices of the Los Angeles and San Francisco chapters of the American Institute of Architects. Architects and home designers, without restrictions as to place of residence, are invited to come in.

The competition is creating a wide interest thruout California and, it is hoped, will provide the association with a wealth of small brick house designs which will later be published in book form and offered to the public. The closing date of the contest has been set for December 15.

This contest is especially interesting at this time in view of the public interest which has been aroused in the subject of permanent homes, since the disastrous fire at Berkeley and at other places. The material secured in this competition will be used to show that attractive, permanent homes can be built as economically of brick as of any other material.

Since its organization this summer the California Common Brick Manufacturers Association has displayed a commendable amount of enthusiasm and progressiveness. A secretary and an engineer have been engaged and literature is being published in abundance to promote common brick. Among the association's activities is the publishing of a weekly news sheet called "The Brick Bulletin" which keeps members apprised of the work being done.

* * *

GOOD INFORMATION ON CONCRETE

Copies of Bulletin No. 137, entitled "The Strength of Concrete: Its Relation to the Cement, Aggregates, and Water," by Arthur N. Talbot and Frank E. Richart, may be obtained without charge by addressing the Engineering Experiment Station, Urbana, Ill.

The question of how to proportion the ingredients in designing concrete mixtures is an important one. How much cement, how much sand, how much gravel or broken stone, and how much water must be used to secure a specified workability with the particular materials that are to be used? Bulletin No. 137, enunciates the relations between the compressive strength of concrete and the amount of cement and voids contained therein. It answers the questions enumerated above.

What Is a Fair Percentage of Profit?

Do You Figure Interest in Your Selling Price?—How Do You Figure Profit?—On Cost?—Selling Price?—Read This Article

A MUCH DISCUSSED QUESTION in the matter of costs is, "Shall interest be figured in the cost of the product?"

It is immaterial in one sense, but when cost is being figured for the purpose of arriving at a selling price then interest must be considered if a final profit is to be forecast with any degree of accuracy.

Why not figure what your profit should be on a year's business? Expenses are covered by a budget prepared at the beginning of the year by those who carefully finance their business and profits can be estimated in the same manner, but to do so, interest and other similar indirect expenses must be considered. If this plan could be adopted by all clay workers we should see less of financial troubles and no "selling below cost just to get the business."

The author of this article is a manufacturer whose name, if it were mentioned, would be recognized by nearly every reader. The products of his plants are of very high quality and enjoy a wide distribution. He, himself, enjoys the reputation of being a keen business man and a leader in the face brick industry.

This manufacturer writes a short message which won't take you long to read. It contains a thought that you should consider if you have not already done so. Read the article thoroly and if you have any further thoughts or any criticisms write the editor about it.

How Do You Figure Profit?

What percentage is a fair profit? In answer, allow a question: Are you figuring a certain per cent. of amount received as profit, or a certain per cent. on cost? An illustration of this follows:

Assume that brick are sold at $20 per M and it is figured that this price shows 25 per cent. profit: Do we mean 25 per cent. of $20 is profit—or 25 per cent. on cost, which would be 20 per cent. of the selling price as profit? The difference is $1 which is $12,000 on a 12,000,000 production.

Now, to the main question: What is a fair percentage of profit? To answer this, we must consider the matter of turnover. Department stores figure on five to seven complete turnovers of capital invested in stock each year. How many clay plants, particularly face brick plants, have averaged one turnover each year for the past five years? It is a plain truth that where five to seven turnovers are made, they can be handled on a lower net margin than where only one is made—the difference can readily be seen for, if each of five turnovers produces ten per cent. gross, it is 50 per cent. gross total. If but one turnover produces ten per cent. gross, there we stop.

25 Per Cent. Not Exorbitant

In the days of seven to ten years ago, many face brick manufacturers felt that a profit of 50 cents per thousand was ample, and as a result many plants have passed into other hands and refinancing has been necessary. Why not figure costs with reasonable accuracy and then put on a fair margin? Assume that the cost is $16 loaded on cars or stocked in shed, with a cost of $0.70 to $1 for loading out of shed, then the stocked brick will cost, say, $17 loaded on cars. 25 per cent. is not exorbitant, making the selling price $21.25 per M and the same per cent. applied, no matter what the cost.

This would be revolutionary, but it is good business sense. If $250,000 is invested in a plant, it was invested for the express purpose of making money. To-day good securities can be purchased to yield six per cent., the risk being at a minimum. Should not the men who have made an industrial plant possible in a community be entitled to more than six per cent. when risk is involved (credit risk, non-operation due to poor business, troubles with raw material, car shortages, strikes, embargoes, and so forth). Assuredly they are. Six per cent. on $250,000 is $15,000, and until this is paid the invested capital and energy has really made no money for the stockholders, for they could have done as well in other ways with less risk and annoyance. $15,000 means $1.50 per M on 10,000,000 net production. If costs are $16 it is nearly ten per cent. on cost and it should be a ten per cent. dividend instead of six per cent. This would mean that to a $16 cost must be added $2.50 at least, just to cover actual requirements without building a surplus in the business. This $2.50 is 15⅝ per cent. profit on cost.

Look Finances in the Face

I ask you, in all fairness, is 25 per cent. an exorbitant percentage to figure? I feel sure you will, after careful figuring say it is not.

Let us then figure percentages not just cents profit per thousand brick and we shall soon find our industry one to be more proud of than ever. Men are happy to be known as steel manufacturers, but, as a rule, a brick man seems to think he is inferior to the steel man. A wrong situation and one to be corrected only by looking finances squarely in the face. Get a proper margin of profit and let us take our proper standing in the big field of industry.

Declining Prices Coming

We are facing a period of declining prices, but we should not reduce prices without carefully figuring our "estimated" costs for the ensuing six months, and then place thereon our proper percentage of profit. Why apologize for trying to make a profit? Does the candy manufacturer or the furniture producer or any other you can name hesitate to put his business on a sound basis? He does not. Why should we?

Investigation has shown that a large percentage of the corporations of this big country make no profit. Let us strive to have every face brick plant pay "INCOME TAX" in 1924 and then we can all be proud to be known as BRICK MEN.

* * *

FORM NEW BOSTON COMPANY

The A. J. Rogers Co. of Boston has been incorporated to manufacture brick, it is said. The company has an authorized capital of $100,000. The incorporators are Alfred J. Rogers, Winthrop, Mass.; Mildred Rogers, of Winthrop, and Elizabeth F. Dolan, of Avon, Mass.

Firing with Producer Gas

Excellent Hints on the Operation of a Gas Producer Fired Continuous Chamber Kiln—Kind of Coal to Use

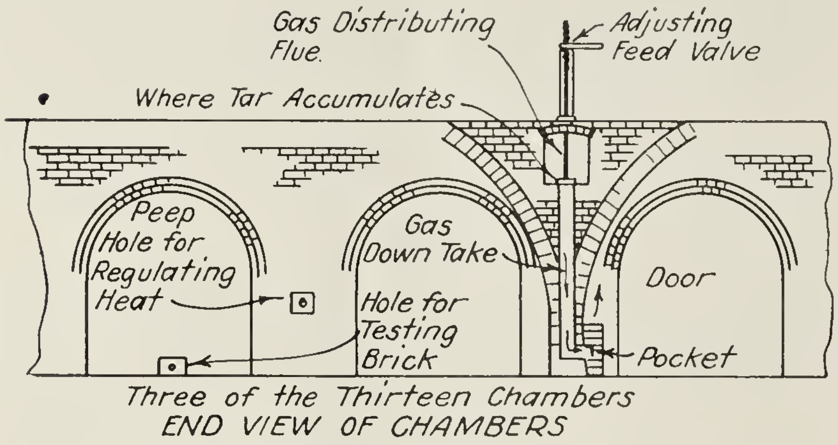
C. F. Smith

Superintendent, Ironton (Ohio) Fire Brick Co.

PRODUCER GAS fired continuous kilns have been in use in this country only a comparatively short time, but I feel that a few years hence will see many fire brick concerns adopting this type of kiln. The success of the continuous chamber kiln depends largely upon the operation of the gas producers. Slack is probably the cheapest fuel but unless the producers are especially designed for its use, it cannot be used. Nut, run of mine and lump coal are satisfactory. The nut gives the best results but on the other hand is hard to get. When run of mine or lump is used the large lumps should be broken up, while run of mine containing much slack should be avoided.

Qualities of Producer Coal

The principal requirement of a coal for producer's work is that it be high in volatile matter. This is not the only requirement, however, as many coals have fairly high volatility but give it off with a rush, thus flooding the kiln with gas for a few minutes, following which the supply is poor. The ideal coal is one that gives off its volatile matter slowly, keeping up a steady supply from this source while the CO is coming from the fixed carbon. One of the very safest plans to follow when looking for a good gas producing coal is to consult the manager of the nearest domestic gas plant. Such a plant uses the highest grades of gas coals as a general rule and information as to its source of supply will be valuable. Usually, it will be a good investment to pay from 25 to 35 per cent. more than the local market price in order to obtain a high grade coal, as the difference is easily saved in the added efficiency of the gas and the lowered costs of labor required to handle the producers.



View of Ends of Three Chambers in Producers Gas Fired Continuous Kiln Showing How Gas Enters Chambers

Feeding the Producer

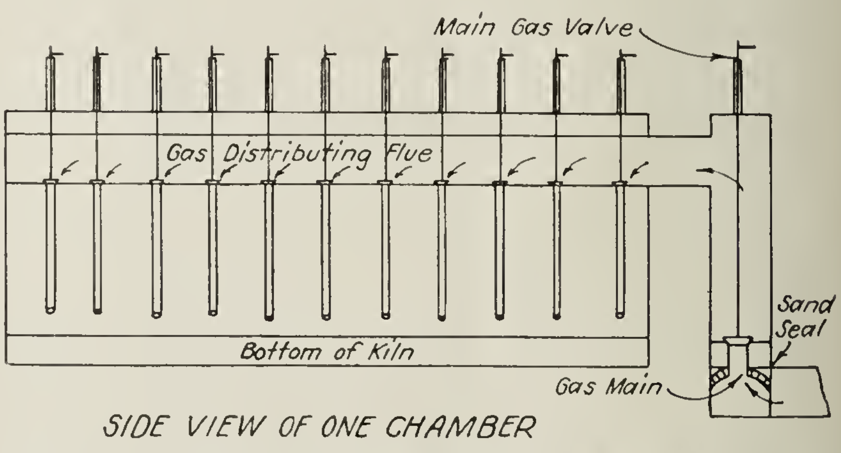
The rate at which coal is fed into the producers depends upon the size or capacity of the producer and the fuel. A six foot producer working under easy conditions with a good coal will consume from 160 to 200 pounds per hour. There is a certain height in each producer at which the top of the fuel bed should be kept. This is usually slightly below the outlet flue. Naturally, fuel must not be fed faster than it is consumed or it will raise above its proper level. The level, then, is the gage that regulates the rate of feeding.

Pokering is a very important part of producer operation. This consists of dropping a long poker thru the poke holes near the top of the producer and stirring the fuel bed. The poker should reach to the grates and the pokering should be done in such a way as to affect the entire bed from top to bottom. This is not done at any specified intervals but rather whenever necessary, sometimes as often as once every hour. The surface of the fuel bed must be watched for holes or bright spots which show that the air is channelling. When such a spot is noted it should be closed at once with the poker.

Keep Pressure Constant

Pressure at the boiler should be 60 pounds when the producer is operating normally. It is quite important that the pressure be kept constant under ordinary conditions and it should not be allowed to fluctuate with the boiler pressure. A regulating valve in the steam line between the boiler and the blowers will insure constant pressure.

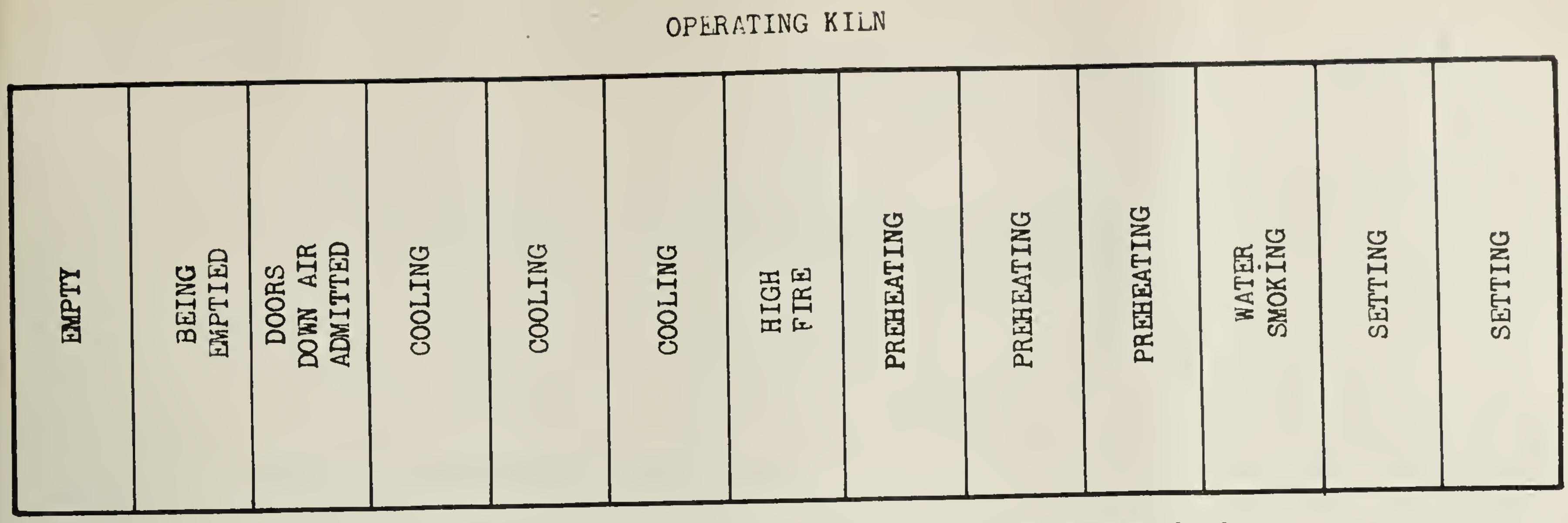
The temperature of the gas as it leaves the producers is quite important. One of the greatest troubles producer gas users have had in the past is due to the fact that the gas "cracks" at certain temperatures and rapidly deposits either soot or tar in the gas flues. This soot and tar chokes the flues and shuts off the supply at the burners, thus necessitating frequent burn-outs. The time consumed by these burn-outs is a dead loss, since the kiln has to be shut down during that period, which covers from ten to twelve hours. Producer gas made in the type of producer generally used will deposit tar at temperatures below 800 deg. F. These temperatures refer to gas as it leaves the producer. The neutral zone is between 800 and 900 degrees, and when the gas is kept within this zone, the minimum amount of tar and soot will be deposited.



A Side View of One of the Chambers Showing Arrangements of Gas Burners

Watch Flue Temperatures

By closely watching pyrometers installed in the gas flues it is possible to operate a kiln for 30 days before being



How a 13 Chamber Continuous Kiln Is Fired—Each Section Represents a Chamber

troubled with choked flues, and by the simple method of keeping the gas at the proper color, the kiln will probably run even longer. It is much better to keep the gas too cool than too hot. Tar is troublesome at the valves, but it takes up very little space in the flues, and accumulates slowly. Tar at the valves is cleaned out by shutting off the gas at the main flue to the kiln, then lifting the valves from their seats. A log chain 10 to 15 feet long can be dropped thru the valve seats and the cleaning easily and quickly accomplished by pulling the chain up and down rapidly. This can be done any time during the firing period without much loss in temperature.

The number of chambers to be carried in a current varies with the size of the fan unit, the setting and the condition of the kiln. A fair average would be nine chambers. One of these would be on high fire, three ahead would be preheating with the waste gases from the fire, while the fourth ahead would be water-smoking. Three chambers behind the fire which contain cooling ware would be preheating the air for combustion, and the fourth behind would be supplying hot air for the chamber being water-smoked. The fifth behind the fire would be opened so as to admit the air to be preheated for combustion. This may be varied by increasing the number of chambers ahead of and behind the fires, but it would be bad practice to carry less than three ahead and three behind. It is extremely hard to say just how much gas is to be carried on a gas kiln. Each kiln will vary somewhat according to the construction.

Amount of Draft Important

Under normal conditions a kiln which finishes a chamber every 24 hours should have 1½ inches of draft on the chamber ahead of the high fire chamber, and two inches on the second chamber ahead of the high fire. These draft readings refer to conditions just after a fresh chamber has been lighted up and finished. An expert burner, in addition to using his draft gages, is governed by the sharpness of the flame as it leaves the ports. Under high draft the flame cuts sharply away from ports, while under low draft it rolls slowly under the crown. A record should be kept on each chamber, and as soon as the best draft has been determined, it should be adhered to as closely as possible when that particular chamber is reached in the current.

Peep holes in the doors are used for watching cones, which are placed in different parts of the kiln. The kiln also is equipped with peep holes or wickets for governing gases from the valves.

Setting a Simple Process

There is nothing complicated about the setting in a chamber kiln as each chamber is exactly like a rectangular down-draft kiln. Any method of setting which is used in a down-draft kiln can be followed successfully. In most gas chambers it will be found best to allow plenty of room between setting and crown if speed is desired. I have made several experiments to find out at what height the greatest kiln speed can be attained.

Flashing Brick

The method of flashing is extremely simple. When the finishing point of the ware is approached, the draft is cut very low. This causes the gas to smoke and the chamber is quickly filled. The chamber is allowed to remain in this condition for from 15 to 40 minutes, and the draft is then raised and the chamber cleaned of smoke. The smoking is repeated at intervals of 15 to 30 minutes and continued until the required colors are gotten from top to bottom. Some experimenting is necessary to determine just how long it is necessary to continue the smoking periods. Care must be taken during the reducing periods or the top courses will get too hot and be deformed or melted. If a chamber is finished at 2,700 deg. F., 24 hours after it is taken off its temperature should not be less than 1,000 degrees. A kiln should always give good results if such conditions are maintained.

The chambers in a continuous kiln such as here described are 49 feet long, 14 feet wide, and 9 feet high. These chambers can be burned off at the rate of one every 24 hours and the kilns should not have less than 13 chambers. The amount of coal used on this type of kiln is 800 pounds per thousand nine-inch brick.

⁂

PROBLEM OF PEBBLES IN CLAY TO BE STUDIED

A conference was held on November 9, at the office of the Ceramic Division of the Bureau of Mines, Columbus, Ohio, and as a result three fellowships have been established by the Bureau of Mines in cooperation with the Engineering Experiment Station of the Ohio State University. One of these fellowships is to be dedicated to the investigation of a problem in the heavy clay products field. Representatives from the common brick, paving brick, sewer pipe and hollow tile industries were also present at the conference in addition to the heads of the Engineering Experiment Station and the Ceramic Experiment Station of the United States Bureau of Mines. "The Removal of Pebbles and Stones from Clays in Order to Make Them Available for the Manufacture of Heavy Clay Products" was the problem selected and approved for study by the conference. The determination of the best methods will not only be undertaken by this investigation, but also a study will be made of the actual cost of such methods. Fred T. Heath is the incumbent of the fellowship for this study. Mr. Heath has had considerable experience in the heavy clay products field.

Any manufacturer who is troubled with pebbles in his clay would do well to get in touch with the bureau.

How Good Silica Brick Are Made

Part 4

Dealing Principally with the Setting of Green Brick and Shapes in the Kiln

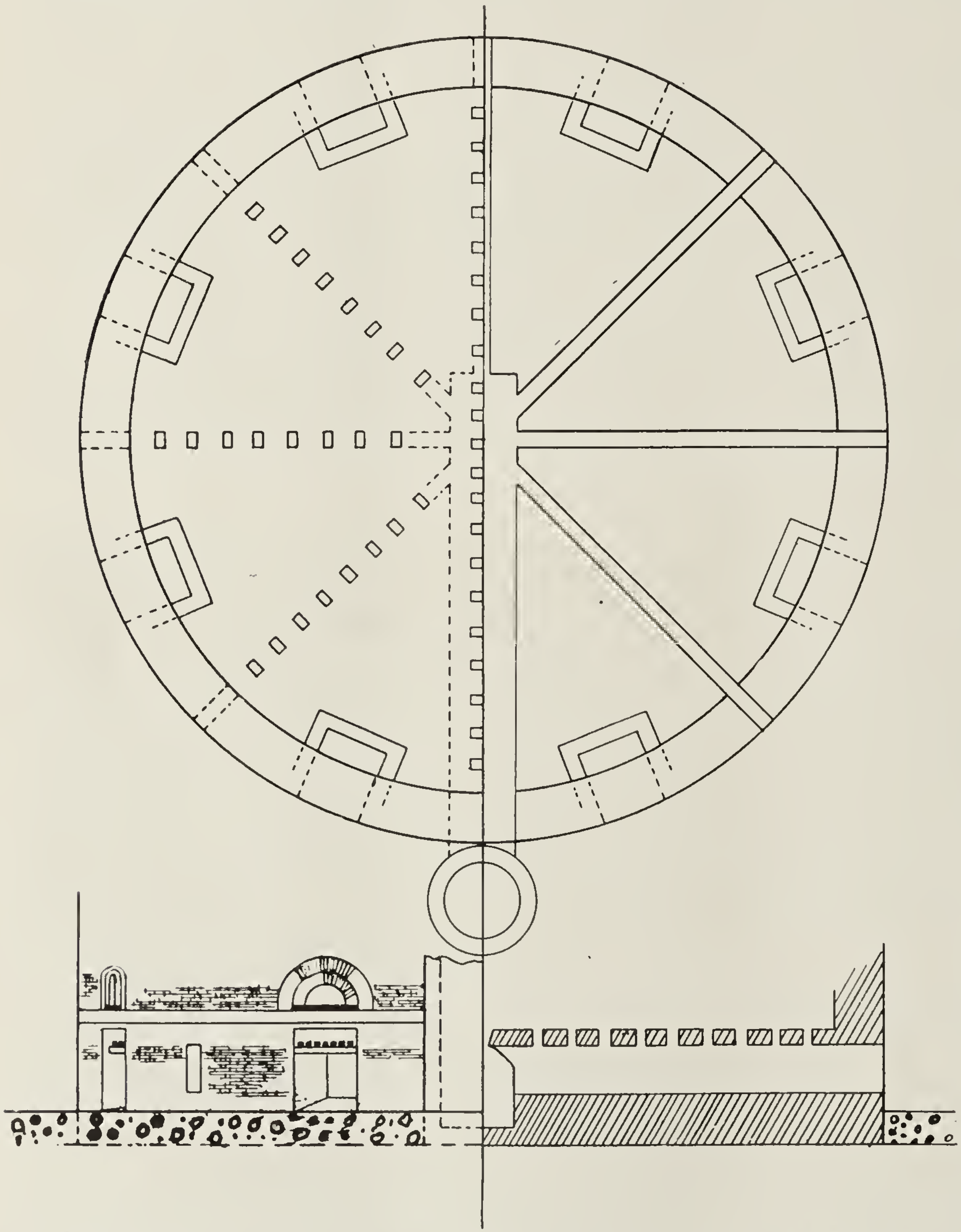
E. E. Ayars

Chairman Refractories Division, American Ceramic Society

SETTING OF SILICA BRICK is one of the most important steps in the process of manufacture. The first duty of the man in charge is to inspect carefully all kilns to make sure that the flues, stack, floor and kiln interior are in good condition. The flues must not be restricted nor filled with sand and bats. The floor should be as level as possible, with flue openings free from obstruction and all fire boxes and arches in good repair. The life of a kiln depends on the attention it receives between burns and burning results are influenced by kiln conditions to a great extent.

Types of Kilns

The kilns* in general use for burning silica brick are of the round down-draft well hole type, and vary in diameter from 30 to 40 feet. The most used kiln has a diameter of 32 feet. Sometimes two kilns are led to one stack, but it is usually more satisfactory to provide a stack for each kiln. The flue system consists of a main flue leading from the center well to the stack, and several small flues radiating from the center to the rim. The cross section of the main flue is approximately three by four feet, while the riddles or small flues are nine inches wide and 27 inches deep thruout. The flue dimensions given are for a 32 foot kiln only. Flue openings are provided in the floor. The number of fire boxes varies with the size of the kiln, eight being the usual number for a 32 foot kiln, while ten may be used on 38 and 40 foot kilns. Grate area is also a variable, depending on kiln volume, flue cross section and fuel available.



Flue System and Floor Plan of Round Down-Draft Kiln Used for Burning Refractories at High Temperatures. Note Method of Cutting Small Flues Into Main Tunnel

Setting the Kiln

Setting starts at the center of the kiln, the first bench being placed three inches from the center line. A foundation of old burned brick is prepared in such a manner as to provide free passage of the flame under the bench during burning. Care should be exercised in laying the bench foundation to avoid covering any of the riddle holes. The stretchers of the foundation are carefully leveled with sand. The methods and form of setting depend on the material going into the kiln, but it is desirable to set standard nine inch brick in the bottom bench, special shapes going into the "header." Nine inch brick are set on edge, "tight bolt" fashion, a space of approximately one-quarter of an inch being left between brick. Benches may be two, three, four or five brick wide, depending on the kind of brick going into the header. The usual rule on straight setting is a four brick bench. A five brick bench is just a little bulky for best results in burning and the center may come out soft, so that it is only used in emergency. The bench is carried 18 brick high, at which point a double stretcher of old silica brick is applied and carefully leveled with sand before the header is started. The header may consist entirely of Standard or Ordinary brick, but on plants manufacturing special shapes the header is reserved for such material. The ends are built up of Standard or Ordinary brick to provide protection for the shapes from the fire, and strength for the setting. The header varies from 12 to 18 brick in height, depending on the height of the crown. Care must be taken to cover the top of the setting with old silica to protect the brick from direct flame and the slag action of coal ash.

If the ash from the coal used slags the

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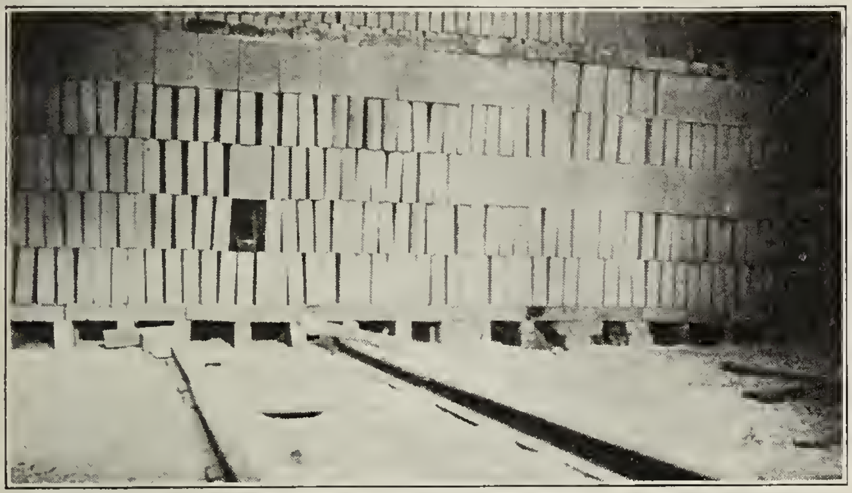
*A complete description of these kilns was published in August 7 issue of Brick and Clay Record.

brick badly it is often necessary to protect the ends of the benches with old silica, as the losses from slagging are extensive and costly.

Silica brick expand on burning and plenty of clearance should be left between the bench and kiln walls and crown. 14 inches all around is the usual allowance. This clearance provides space for flame circulation as well as assurance against damage to the crown or kiln walls from expanding benches.

A space of from four to six inches is left between benches, "stickers" being used to steady the setting and prevent the space from closing up while under fire. This space serves as a flue thru the setting and it is essential to good burning that it be kept open.


Setting of "Ordinary" Brick in Bottom of Bench—Note Foundation of "Old Silica" Under Bench

Setting Difficult Shapes

Ordinary brick can be safely set almost anywhere in the kilns as may also any essentially rectangular shape. In setting such material in the bench the brick are placed on end and at least every two courses a stretcher is put in to prevent collapse of the work, and by equalizing the weight to reduce the amount of crushing.

Many Difficult and Coke Oven shapes will not stand the weight of other brick, or are of such form that they may only be set one brick high. In this case they are set in bridges or boxes. A bridge consists of a regular nine inch bench in which the inner courses are omitted to provide space for the shapes. As soon as the bench is carried high enough to clear the top of the shape burned brick slabs are placed across the opening to form the bridge and serve as a support for the next course of shapes. Plenty of clearance must be left between brick for expansion. Some types of brick will come out safely only in bottom bridges, while others must be placed near the top of the kiln. Boxing is seldom used except with long, thin brick, which are inclined to warp when set on end. The box is made of burned brick and covered with slabs.

Eliminating Local Hot Spots

Bridges and boxing should never be carried close to the doors as the heat penetrates to the shapes more rapidly than they will safely absorb it on account of their large mass. The entire problem of kiln breakage encountered in the heating up stage of firing, aside from too rapid heating, centers around the formation of local hot spots in the setting and in individual pieces. As a consequence we find the cold spots lagging behind these hot spots in inversion and volume change and breakage results. The secret of low breakage is to place shapes in such a manner that they will not be involved in local hot spots. The arrangement of the whole kiln setting has considerable effect on the distribution of heat and long experience is necessary to insure best results when handling all kinds of brick.

Sand Cushion Protects Shapes

Occasionally brick are made having no suitable flat surface on which to set them. In this case special setting blocks are made up and discarded after the burn. These blocks often take the breakage, allowing the brick to come thru in good shape, altho the reverse is also true. The result is always a reflection of the judgment used in placing the brick in the kiln. Generally speaking, shapes set on a sand cushion come out better than when set directly on burned brick stretchers.

Two methods of handling brick from dryer and floor to the kiln are in general use. Tracks into the kiln are provided in one instance, while in the other wheelbarrows are used. Plants drying all standard brick and shapes in tunnels use the tracks entirely. Where the hot floor is used for drying shapes they are taken to the kilns on wheelbarrows. Standard brick may in this case be transported to the kilns on cars or an unloading truck is provided and wheelbarrows used.

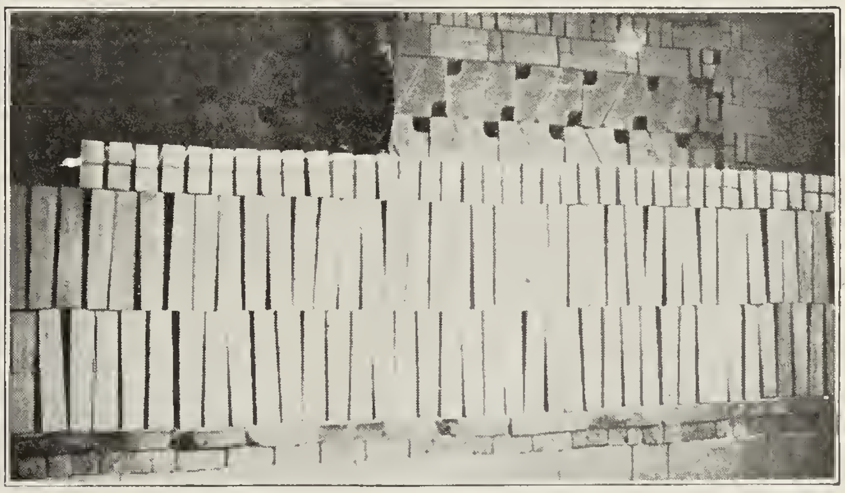
Wheelbarrows Best for Carrying Dried Brick

The use of cars is slightly cheaper, but the brick are never as closely inspected by tossers and setters as they should be and higher kiln breakage is the usual result. A combination of rack car and wheelbarrow is not recommended as considerable confusion results from the rehandling of cars. The best setting speed may be obtained with the exclusive use of wheelbarrows and the final inspection of the green brick by the setting crew reduces the kiln breakage somewhat. The rehandling has very little effect on the workmanship, provided the wheelers are experienced and the proper amount of supervision is used. The flexibility of this method permits the setting foreman to lay out his work and set the available brick to the best advantage, while with the use of cars this is not often possible.

Workmanship has a great deal to do with the quality of setting and the stability of the benches while under fire. "Bellied" brick should not be set and if included in the work produce a "wobbly" bench, which is liable to shift and fall, causing heavy losses.

Uniformity in Setting Desirable

Setting has more or less effect on firing time and coal consumption. Careless building of the benches without due regard to space between them deprives the kiln of part of its draft. If one side of the kiln is well set and the other side poorly set the heat concentrates on the well set side, and it is impossible to bring the cold section up to the desired temperature. This condition often obtains even in a well set kiln if one side contains more shapes than the other. Shapes, being of irregular form, waste more or less kiln space and the flames have easy access to the interior of the setting. Flames do not penetrate solid benches of standard brick as rapidly as they do more open setting and the kiln may be


Setting of "Ordinary" Brick in Bench and Some Shapes in Header

Forty Foot Kiln Set at Yard Level, Shown at Left. Kilns at Right Are 32 Foot Pit Kilns. Note Difference in Height

thrown out of balance. To secure best results both sides of the kiln should have as near the same density of setting as possible.

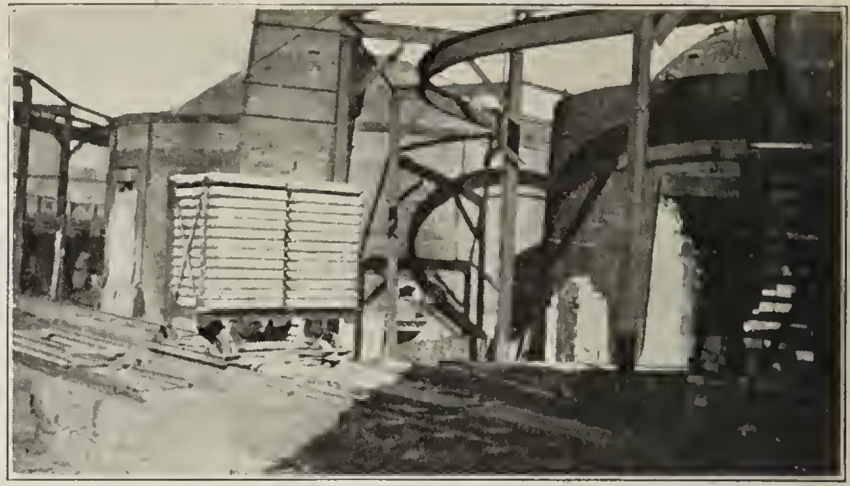
As a rule, kilns containing a large percentage of shapes will come off in less time than those set with solid benches of standard brick, altho the coal consumption per thousand nine inch equivalent will average about the same.

Large Size Kilns

The 32 foot kiln has always been a popular size and very good burning records are obtained. A few years ago several manufacturers built some 38 and 40 foot kilns in an effort to reduce the fuel consumption per thousand. In some cases the 40 foot kilns have been successful as far as quality of ware produced is concerned, altho the reduction in fuel was not always realized. In other cases even the quality of the ware was not satisfactory. The 38 foot is on the average more successful and is standard equipment on some yards. The large kiln, having a high crown, is more costly to set and draw than the 32 foot kiln, as an extra man on a day rate must be furnished with each piece work gang. The fire boxes being large, one man cannot properly clean and stoke the fires after the kiln gets hot. The extra man furnished at a day rate increases the labor cost. If the kiln equipment consists of several 32 foot kilns and two or three large kilns the production schedule is interrupted each time the large kilns are set. A good average turnover time for the small kiln is 19 days, while the larger kiln requires 25 or 26 days and sometimes longer if it "hangs up" under fire. It would appear therefore that there is small economy in the use of very large kilns.

Preparing for Burning

Careful preparation of the kiln for firing is necessary to insure good burning results in the shortest possible time. All flues are thoroly cleaned and the clean-out holes closed. A checker work flash wall of old silica brick is built on top of the permanent bag wall to regulate the course of the flames as they leave the fire box. If a kiln has a tendency to burn a soft top the flash wall is carried higher than in a well balanced kiln, or lower if soft spots have occurred in the bottom. If the fuel is of such a nature that the ash carries over and slags the brick badly high flash walls are useful to check the flight of the ash.



Car of Standard Nine Inch Brick on Transfer Car Ready to Be Run into Kiln. Monoral Is used to Handle Coal and Ashes

The average thickness of wickets used in all high temperature kilns is 13½ inches. Cold spots are often found in the door and soft brick result. Additional thickness in the wicket reduces the loss of heat and eliminates the cold spot. A satisfactory method of wicket building consists of erecting the customary door and plastering it. Outside of this another door nine inches thick is built, the coat of plaster being applied after the kiln is on fire. Wickets and doors in the stack base and riddle cleaning holes should be plastered regularly thruout the burn to keep them tight and eliminate infiltration of cold air.

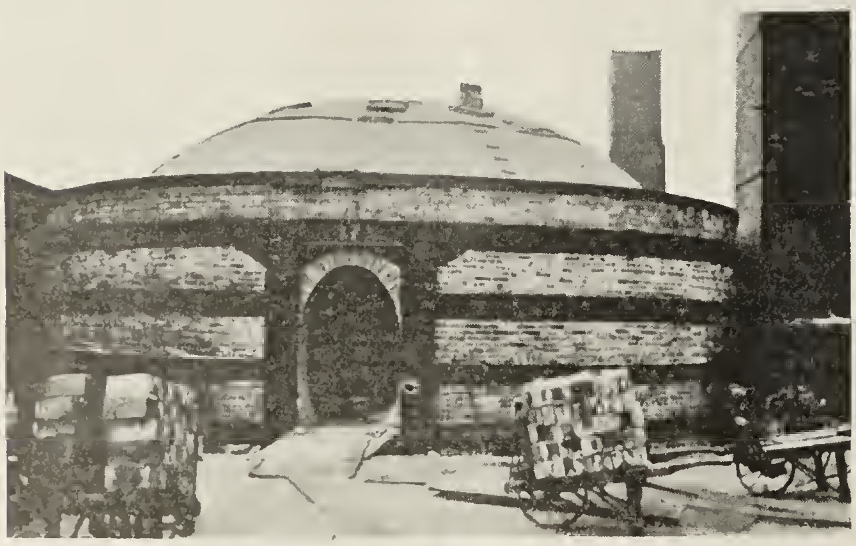
Firing Procedure

Kilns are lighted with wood, lump coal being added at once. During the first 24 hours of the burn a small bright fire is carried and the fire holes are left open. At the end of this time the size of the fire is gradually increased and the fire holes closed. No doors are used as the fire box is provided with a coking plate and the fire hole plugged with fine coal.

Ports are provided in the crown to allow the moisture in the setting to escape during the early stages of the burn. Four alternate ports are usually closed at the end of 24 hours, the remainder being closed 12 hours later.

A warm kiln bottom assists materially in starting the draft and little trouble is encountered in getting the kiln to take the stack. The draft is very sluggish at the outset and is rarely higher than two-tenths of an inch at the end of the third day. Weather conditions have some effect on the draft of a green kiln but after the kiln is hot do not appear to have any marked influence.

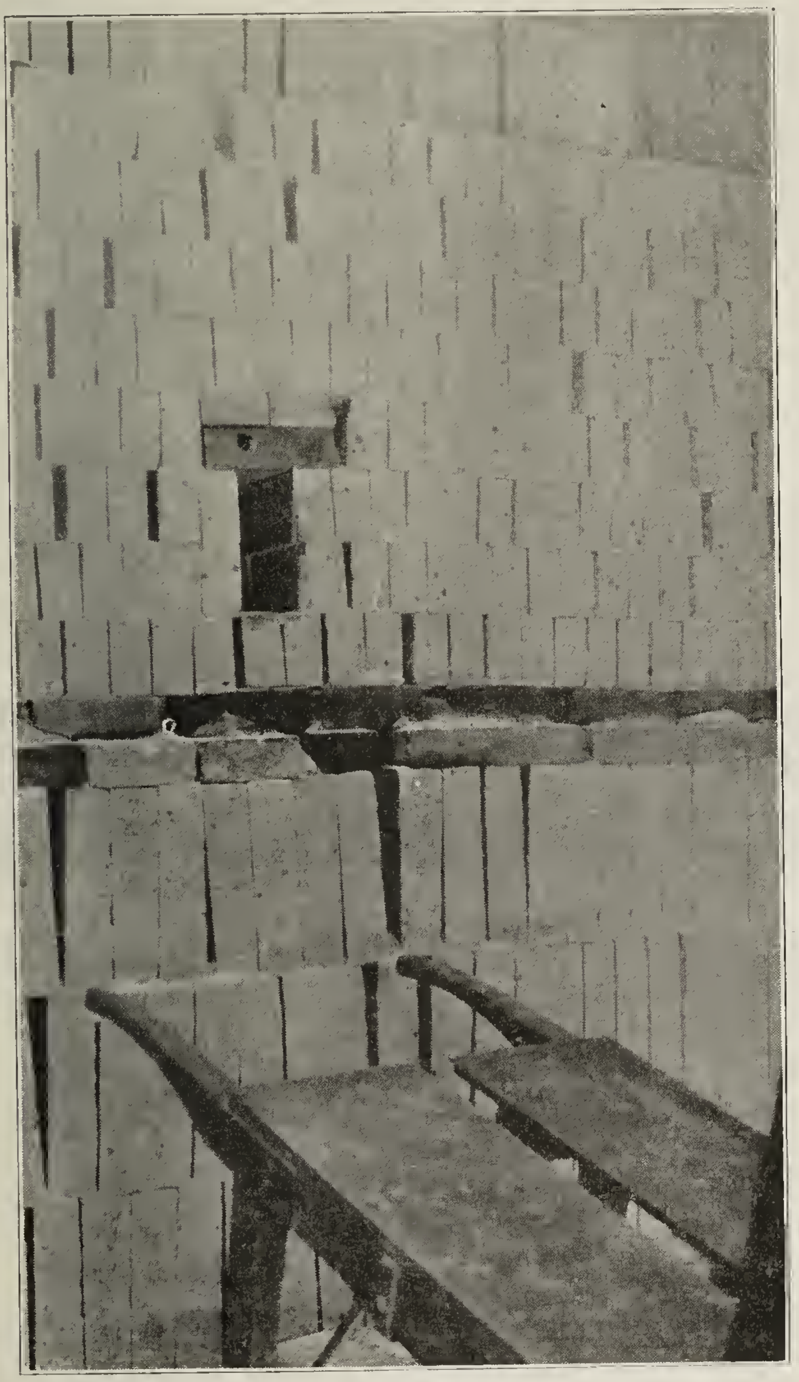
The average hourly rise in temperature of a green kiln



A 32 Foot Round Down-Draft Kiln Set in a Pit. This Kiln Is Used for Burning Silica Brick

Rack Car Loaded with Simple Shapes Being Unloaded to a Wheelbarrow varies with local conditions, but 30 degrees has been found to be satisfactory, both from the standpoint of burning speed and heat distribution. As the temperature increases the hourly gain decreases until toward the end of the burn 30 degrees may only with difficulty be added in a 12 hour shift.

The coal used in various sections of the country varies with the experience of the manufacturer. Eastern plants use either high or low volatile coal of 13,500 to 14,200 B.t.u. with a preference for low volatile fuel. Middle western operators prefer high volatile coal, plenty of which is available carrying 13,800 to 14,000 B.t.u. A coal that clinkers slightly is desirable as it holds a hotter fire. High sulphur coal with its resultant low ash fusion is to be avoided on account of the hard clinker it forms. A hard clinker is so difficult to clean from the grates and fire box walls that the cleaning period extends over too long a period of time and results in a loss of heat. Sizes of coal best suited to the early stages of the burn are No. 1 and No. 2 nut, mine run or modified mine run being put on the third day and carried to the end of the burn. Fresh slack may be burned on a hot kiln efficiently but is not suitable for lighting. Mine run is used on most plants thruout the burn.



Setting of "Standard" and "Ordinary" Brick. Note Double Stretcher Course of "Old Silica" Leveled Up with White Sand

At least one plant is now experimenting with oil burning on silica brick kilns.

Amount Coal Required

Coal consumption is entirely a matter of local conditions, in which design and condition of kilns, setting, plant capacity, character of raw material and finished product, quality of fuel, skill of workmen and burning temperature all play a part.

One western operator burned brick to cone 17 in a 30 foot kiln equipped with 12 fire boxes with one ton of coal per thousand. When he needed more kiln space he investigated the popular 32 foot kiln but decided his kilns were plenty good enough when he found that the coal consumption was around two tons per thousand, and rarely as low as 1.6 tons except under the best conditions.

Brick are burned from cone 17 to cone 20, depending on the demands of the trade or the service for which they are intended. Cone 18 may be reached on the average with 1.6 tons per thousand while two tons or more is required to reach cone 20.

Poor coal and unskilled workmen are responsible for more high fuel consumption records than any other factors affecting the burn, provided of course that the setting is at least average and the flues have been properly cleaned and closed.

* * *

NO SLUMP IN PAVING BRICK SHIPMENTS

That the paving season, because of a wet spring generally and a late start, is running later in the fall this year than is customary, is indicated by the continued heavy shipments of vitrified paving brick as reported by the National Paving Brick Manufacturers Association. Shipments for the month of October were 34,287,000 as against 34,761,000 for September. Total number of brick manufactured was 34,317,000 for October and 34,457,000 for September. Stock on hand was reported at 76,613,000 for October as against 86,530,000 for September.

Ohio led all other states in the purchase of paving brick, buying 6,763,000 for city streets and 4,950,000 for country highways. Illinois, Minnesota and Pennsylvania followed closely in the order named.

* * *

HOW BUSINESS STOOD IN OCTOBER

Principal business indicators for October, according to the Department of Commerce, show the following changes in index numbers from September based on the 1913 average as 100: Pig-iron production from 122 to 123, steel-ingot production from 131 to 141, unfilled steel orders from 85 to 79, liabilities defaulted in business failures from 125 to 349, sales of mail-order houses from 231 to 335 and bank clearings outside New York City from 242 to 281.

* * *

PLEASE MAKE THIS CORRECTION

Many clay products manufacturers find it of benefit to keep on file the back issues of Brick and Clay Record. Therefore we would appreciate your turning with us to the inside back cover of the November 13 issue in order to make a necessary correction in the advertisement of Lancaster Iron Works, Inc.

Look for the second line in the second column. It should read "The Martin Lancaster Steam Pipe Rack Dryer."

Please make this notation now in your November 13th copy, so the advertisement will read properly when you have occasion to refer to it in the future.

* * *

HYDRAULIC PLANT TO BE EXPANDED

The Hydraulic-Press Brick Co. of Toluca, Ill., is making extensive repairs to its plant two miles south of Sparland, Ill. It is understood that an extensive expansion program is contemplated and the plant will be developed into one of the largest in the state.

Try It On Me!

Get out your pencil and paper and frame up an advertisement for your local newspapers about your products. Talk to the consumer. Imagine you are telling your story to a group of your wife's woman friends who are interested in *what* your products will do for them, rather than how they are made, or how much better they are than Bill Smith's.

Send me the ad, care of Brick and Clay Record. I'll criticize it, *without charge,* and tell you where it can be improved, if at all. Chances are it will be a better ad than I would write myself, tho I am paid comfortable fees for my professional skill as an ad writer.—*R. R. Shuman.*

How Brick Manufacturers Can Advertise Profitably

R. R. Shuman

Advertising Counselor

THE ONE DISADVANTAGE in association advertising is that it gives the thoughtless individual members an excuse for lying down on their own local advertising.

Of course it should do just the opposite: because the national association advertising stops with telling **what** to buy—creates a desire for brick and clay products, opening the way perfectly for the individual manufacturer to capitalize that created-demand by telling his own fellow citizens **where** to buy the products that the national advertising has made them want.

Do You Fit This Picture

Let's put this thought into a picture: Say you own an interest in a huge towboat that is scheduled to steam up the same swift stream that you must travel in your own canoe: do you hitch your little craft to it, or do you paddle furiously alongside unaided? You have paid your share of the fuel and man-power that propels the powerful steamer; it is making the journey for you; why not utilize the power for which you have paid?

Think of business-building as a voyage up-stream. Think of advertising as **power,** not as expense; think of yourself as the man straining at the oars.

A Great Opportunity

Say it costs associations a million dollars to convert a million prospective builders to the gospel of modern clay products; that your share of that appropriation is a thousand dollars a year; and that a thousand prospects in your shipping radius have been "sold" on at least a theoretical preference for clay products as a result of that thousand dollar investment. Isn't it a marvelous **opportunity**—a priceless privilege—for you to be able to reach out with your own advertising and **clinch** those thousand sales?

Suppose it cost another thousand dollars—or even **five** thousand—to convert an intangible preference for your products into the decisive **action** that will keep your plant busy and your motor trucks on the jump—isn't that a cheap way of getting business?

The association advertising has laid a foundation that you could not have built for many times the investment, because the cost of wonderful drawings, art work and high priced advertising experts has been distributed over such large appropriations.

BRICK

Tile and Other Clay Products

for that new home
or for remodeling
the old one.

PROMPT DELIVERY ANYWHERE

The interesting advertisements of the Brick associations, that you have been reading in the magazines have convinced you of the advantages of Brick and Tile for building and remodeling.

All you desire to know, now, is where your contractor can buy the *best quality* of these products at the lowest cost, and with the least delay.

Write, phone or call and let us tell you about our products and our service.

(Name, address and phone number of manufacturer)

Use the "Ad" Here Shown

Your own advertising need not repeat the arguments sent home by the national campaign. Its one duty is to tell the public **where** to buy the very best qualities of the brick and clay products they have already decided to use.

One sample ad is here given, for your convenience. Clip it out and let one of your local newspapers put it into type, so that you can send proofs to all the newspapers in your zone that you can afford to use.

Then let one of the newspapers reprint the ad on big postal cards, for you to mail to all contractors, and all prospective builders whose names you can secure.

Do this with each one of the series that will follow. The results will surprise and delight you.

The Convention Box

December 4, 5 and 6.—American Face Brick Association, French Lick Springs Hotel, French Lick, Ind.

December.—National Paving Brick Manufacturers' Association, plans not definite.

January.—Hollow Building Tile Association, Chicago, Ill., plans not definite.

February 4, 5, 6, 7 and 8.—American Ceramic Society, Atlantic City, N. J.

February 11, 12, 13, 14, 15 and 16.—Common Brick Manufacturers Association of America, Biltmore Hotel, Los Angeles, Cal.

February 13 and 14.—Canadian National Clay Products Association, Prince George Hotel, Toronto, Ont.

FACE BRICK PRODUCTION RISING

Production of face brick during October, as reported each month to the American Face Brick Association by 32 identical plants, amounted to 25,805,000 face brick, as against 21,862,000 for September. Stocks increased slightly in October, amounting to 47,861,000 as against 45,463,000 the previous month. A drop of approximately 8,000,000 brick was announced for October, the total amount being 31,979,000. Shipments on the other hand increased a little over 3,000,000 in October from 19,439,000 to 22,646,000 in October. The total amount of brick produced to date is 233,324,000 which compares with 222,522,000 during the same period 1922.

* * *

CLAY WORKERS UNION GAINS STRENGTH

The American Federation of Labor consists of 108 national and international unions, 49 state federations, 901 city central bodies, 523 local trade unions and federal labor unions, four departments, and 818 local department councils.

The following international unions gained in membership over 1922: United Mine Workers; Mine, Mill and Smelter Workers; Molders; Elevator Constructors; Upholsterers; Carpenters; Hod-carriers; **Brick and Clay Workers**; Marble Cutters; Plasterers; Stone Cutters; Stereotypers.

* * *

VA.-N. C. ELECTS NORWOOD PRESIDENT

A meeting of the Virginia-Carolina Brick Manufacturers Association was held in Raleigh, N. C. on Thursday, November 8. There were about 25 men present, representing 20 or more concerns. The meeting was made the occasion of the annual election and it was agreed that the second Thursday in each November should hereafter be the organization's annual meeting date and also the date for election. At the November 8 meeting the following officers were elected: George M. Norwood, Geo. M. Norwood Brick & Tile Co., Raleigh, N. C., president; F. D. Daniels, Borden Brick & Tile Co., Goldsboro, N. C., first vice-president; F. L. Douthat, Douthat Riddle Co., Danville, Va., second vice-president; Edward Cox, Pee Dee Brick & Tile Co., Blue Brick, S. C., third vice-president; J. W. Pugh, Nansemond Brick Corporation, Norfolk, Va., secretary and treasurer.

* * *

CORRECTING ERRATA

In the issue of October 31 Brick and Clay Record published an article and photographs describing fire tests of brick walls. This article contained several typographical errors which those who are interested would no doubt wish to see corrected.

In the first line of Table I, the figure 358 deg. F. should have read 258 deg. F. The caption under the picture of the hollow wall should have stated that the wall was built of Western surface clay instead of Eastern surface clay. On page 618 in the first column, the second paragraph, the word "ten inch hollow wall," should have read "13 inch hollow wall" and "18 and 13 inch solid walls" should be "12 and 13 inch solid walls."

If any reader of Brick and Clay Record is saving this article for his files it might be well to make these corrections in the margin.

* * *

HOW EMPLOYMENT VARIES IN BUILDING

The following interesting comparison of the volume of employment at the peak and in the trough for all industries as compared with the building and construction industries, shows that the fluctuation in the latter is considerably greater than the fluctuation for the average of all industries:

		Hours Actually Worked	(Millions)	
Industry	Employes per Concern	Peak	Trough	Per Cent. Decline
All Industries	0- 20	6,956	6,742	3.08
	21-100	2,926	2,521	13.84
	Over 100	9,181	6,589	28.23
Building and Construction	0- 20	307	262	14.66
	21-100	311	264	15.11
	Over 100	228	121	46.93

* * *

U. OF I. ANNOUNCES POPULAR SHORT COURSE

The University of Illinois announces a Short Course in Clay Working and Enameling to be given January 14 to 26, 1924.

The course is designed to meet the requirements of practical men. It will deal with the principles underlying the work of managers, superintendents, foremen, burners and others who may be concerned with the manufacture of ceramic products.

A common school education will suffice as preparation for the course. No fees are required but a contribution of one dollar toward the expense of printing leaflets necessary in certain courses is to be made by each person upon registration.

The course of instruction will include lectures, laboratory work and informal discussions. Besides the members of the staff of the Department of Ceramic Engineering and members of the Engineering and other faculties of the University of Illinois, it is expected that R. M. Howe of The Kier Fire Brick Co., Pittsburgh, Pa., formerly of Mellon Institute; R. R. Danielson of the U. S. Bureau of Standards, and Professor A. S. Watts, head of the Department of Ceramic Engineering of Ohio State University, will assist. Programs may be had upon application to the Department of Ceramic Engineering, University of Illinois, Urbana, Ill.

FINE CERAMIC MANUFACTURE

A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

POTTERS TO MEET DECEMBER 4 TO 6

At a meeting of the Executive Committee of the United States Potters' Association held in East Liverpool recently, it was agreed that the annual meeting of the Association be held in the Hotel Willard, Washington, D. C., December 4-6 next.

The feature of the meeting at Washington this year will be an extended visit to the ceramic department of the United States Bureau of Standards, where considerable study has been going on during the past year both in vitreous china and semi-porcelain standard specifications. These studies have about been completed, and it may follow that final reports will be available on many subjects during the Washington gathering.

The annual report of President George Mitchell, of the Pope-Gosser China Co., Coshocton, Ohio, will very likely deal with the progress made by the industry during the last fiscal year, and W. E. Wells, as chairman of the Labor Committee will also be heard with interest.

The technical program is in the hands of the Research Committee, which will be forwarded members in printed form after the meeting as was the case early this year. The last meeting of the association was in the Hotel Astor, New York, last April.

WELLS MENTIONED FOR SENATE

Rather pronounced is the campaign launched in some parts of West Virginia in the effort to secure the permission of W. Edward Wells, active head of the large Homer Laughlin Pottery Co.'s interests at Newell, W. Va., and East Liverpool, Ohio, to permit the use of his name as a candidate for the United States Senate from that state.

Several years ago, it was suggested to Mr. Wells by some of his very close friends in West Virginia that he be a candidate for such an honored office, but he refrained at that time, believing that his first duty was to the vast interest with which he has been so actively associated for so many years.

Newspapers of the Panhandle state have stated, and very recently so, that Mr. Wells would "fit in" nicely, as his leadership in all his undertakings has never been questioned.

Mr. Wells was born in Brooke County, W. Va., on a farm directly across the Ohio river from Steubenville, Ohio, and it was in the latter city that he received his early schooling. In the generalware pottery industry of the United States, the name of Mr. Wells has for years stood at the top of the list.

FORM MANAGERS AND SUPERINTENDENTS CLUB

Herbert Goodwin, general factory manager of the Atlas China Co., Niles, Ohio, was elected president of the new Managers and Superintendents Forum, formed during a smoker in the new headquarters of the United States Potters' Association at East Liverpool, Ohio, the evening of November 16. Charles F. Goodwin, secretary of the Potter's Association, with headquarters in East Liverpool, was named secretary.

The second meeting, which is to be held about December 15, will be in charge of a committee composed of A. V. Bleninger, head of the research department of the Homer Laughlin China Co., Newell, W. Va.; John Shingler, superintendent of the East Liverpool Potteries Co.'s plant at Wellsville, Ohio; Michael J. Lynch, superintendent of production for the Knowles, Taylor & Knowles Co., East Liverpool; Samuel Eardley, factory manager for the French China Co., Sebring, Ohio, and James Gillgallon, superintendent of the No. 3 plant of the D. E. McNicol Pottery Co., East Liverpool.

The object of this new organization, which is expected to develop into one of the strongest organizations of the kind in the generalware industry, is to enter into plain discussions about plant problems and factory management.

There were 60 odd managers and superintendents at the first meeting, those attending being from plants in the immediate East Liverpool territory. However, it has been explained that managers and superintendents of all plants affiliated with the United States Potters' Association are welcome to become identified with this new arm of the industry.

FORM POTTERY AND GLASS ASSOCIATION

Charles C. Ashbaugh, president of the West End Pottery Co., and Charles L. Sebring, of the Sebring Pottery Co., of Sebring, Ohio, are among the incorporators of the Associated Glass & Pottery Manufacturers, who applied to the Allegheny County courts, Pittsburgh, Pa., for a charter, November 14. George S. Brush, of the Brush, McCoy Pottery Co., of Zanesville, Ohio, and Harry A. Ross, manager of sales for the Pittsburgh Lamp, Brass & Glass Co., are other signers to the application. It is this association that will have sole charge of the annual Pottery & Glass Exposition to be held in the Ft. Pitt Hotel, Pittsburgh, Pa., January 7-26 next year, and every year thereafter.

CHINA COMPANY FORMED IN CLEVELAND

The Consumers China Co., of Cleveland, Ohio, has been chartered with an authorized capital of $5,000 to buy, sell and manufacture china dishes and utensils, it is said. Incorporators are Isidore Greenwald, Morris Ernstein, Sidney E. Elsner and Edwin H. Klein and Samuel Greenwald.

WANT KAOLIN LAND DIVIDED

Some of the stockholders of the Kaolin Land Co. of Fort Payne, Ala., are making an effort to force the sale and division of the lands. This property consists of 1,000 acres of land which is said to contain valuable deposits of kaolin.

WATKINS LEAVES SOUTHERN POTTERIES

William Watkins, for some years foreman of the plant of the Southern Potteries Co., at Erwin, Tenn., has severed his connection with that interest, and is now assistant superintendent of the plant of the Crescent China Co., at Alliance, Ohio. Mr. Watkins has succeeded Herbert Goodwin, who has gone with the Atlas China Co., of Niles, Ohio, as general manager. Mr. Goodwin was formerly with the Crescent company when it was operating the Niles plant, and went to the Alliance shop when the Crescent interests sold the Niles property to the Atlas China Co.

ALBRIGHT BUILDING FOUR KILNS

It is the purpose of the Albright China Co., of Carrollton, Ohio, to add four additional kilns to its production, two for bisque ware and two for glost ware. Construction has begun, and coupled with the kilns this company operated in a separate unit at Scio, Ohio, will give it a production capacity of 21 kilns. The Scio plant was placed in operation early in 1922.

STONEWARE POTTERS LOSE STRIKE

Another strike in the ceramic field which has resulted in a victory for the manufacturers, is that of the stoneware pottery employes in the Crooksville, Ohio, district, who were idle from May last until November 12, when the men went back to work at the same wage they formerly received.

These workers went on strike for an advance of 75c per diem, and altho the manufacturers offered to compromise the question, the employes failed to offer support to the suggestion. Plants in the meantime remained idle, and filled what orders they could from available stocks, which at this time are pretty well cleaned up.

Within a few days after the men returned to work, regular kiln schedules were worked out.

ZANESVILLE ART SHOPS BUSY

Marked activity is noticeable in all the art potteries in the Zanesville, Ohio, territory, where the George S. Brush and the George A. Weller art plants are located. The demand for American art pottery is increasing rapidly, and shipments of this class of ware are more pronounced now than ever before. All of the Zanesville art shops are working to capacity.

OHIO PLANTS TO BE APPRAISED

All clay plants in Columbiana County, Ohio, in which such pottery districts as East Liverpool, Wellsville, Salem, East Palestine, Salineville and Lisbon are located, are to be reappraised early during 1924. The properties have not been appraised for taxing purposes for ten years, and the County Commissioners of that county have ordered an appraisement of all realty.

County Auditor Charles E. Hamilton, of Lisbon, Ohio, has indicated that all ceramic plants shall be re-appraised by experts acquainted with the industry.

Brick and sewer pipe plants in the Jefferson County district, such as at Toronto, Empire and Irondale, it is said will be re-appraised at the same time.

MAYER CHINA INCORPORATES

On November 12, a charter was granted at Harrisburg, Pa., to the Mayer China Co., of Beaver Falls, Pa., one of the oldest manufacturers of vitreous hotel china in the United States. The application for the charter was made by Joseph Mayer, Arthur Mayer and Walter S. Mayer. The business has been conducted for years as a partnership, even after the death of Ernest Mayer, who with Joseph Mayer founded the business. The granting of a charter to the company will perpetuate the business.

DULL SEASON STRIKES POTTERY

The Louisville (Ky.) Pottery Co., according to K. P. Snyder, is in the midst of its dull season, which will last to the first of the year on stoneware as well as flower pots, or pottery. However, the year has been fair, and the company is well satisfied with results obtained. For the past two years the company has been using fuel oil instead of coal in its operations, and has been well satisfied with the change.

FIRST PYROMETERS IN OHIO POTTERY

Pyrometers are being used for the first time in the potteries in the East Liverpool, Ohio, district in connection with kiln firing. The Smith, Phillips China Co., of that city is the first concern to make use of this equipment. The success of the experiment in this plant will very likely lead to installations in all other generalware plants in the upper Ohio Valley territory.

POTTERY CLAY AT VANCOUVER

There are always some people who will not allow themselves to be experted out of their beliefs and efforts. This has happened in regard to the clays of Vancouver and British Columbia. A number of years ago, John Kyle, of the technical classes department of the Department of Education, advanced the idea of making pottery from these clays. Subsequent experiments, however, led to the conclusion that these clays were only satisfactory for brick and for some of the coarser forms of clay products. But at the annual exhibit of the Island Arts & Crafts Society in the Hudson Bay Store in Victoria, B. C., is an exhibit of pottery made from clay found right in Victoria itself. The exhibit shows the clay sample, unfired, fired and glazed samples. These were the work of the students at the summer school session.

SOME RESULTS OF GEORGIA RAILWAY DEVELOPMENT WORK

Coöperative work between the Department of the Interior and the Central of Georgia Railway to determine the value for ceramic use of various clay deposits of Georgia, as announced in Brick and Clay Record at various times, has been concluded at the Ceramic Experiment Station of the Bureau of Mines, Columbus, Ohio. The work was divided into five parts: clay washing; laboratory work on the crude and washed clays; manufacture and testing of refractory materials; manufacture of vitrified face brick; and manufacture of whiteware.

Washing tests on some of the most promising clays were made in the special washer developed by the Bureau of Mines. These tests, supplemented by laboratory tests to determine the burning, shrinkage and other properties of the clays, showed that some of the clays were suitable for manufacture of whiteware. Others proved to be excellent filler material, and the Southern station of the Bureau of Mines is using these washed clays in plant practice tests in the filler trade.

The clays selected in general are, if properly prepared, suitable for the manufacture of refractories. Therefore, 20 tons of a selected clay were made up into fire clay shapes at a large manufacturing plant in accordance with plant practice. These brick have been tested in doors and roof of an electric furnace for melting steel, in oil fired furnaces; for steel-pouring ladles; in boiler settings; in ceramic kilns; and as bungs in furnaces for making malleable iron. They gave exceptional service in practically all tests.

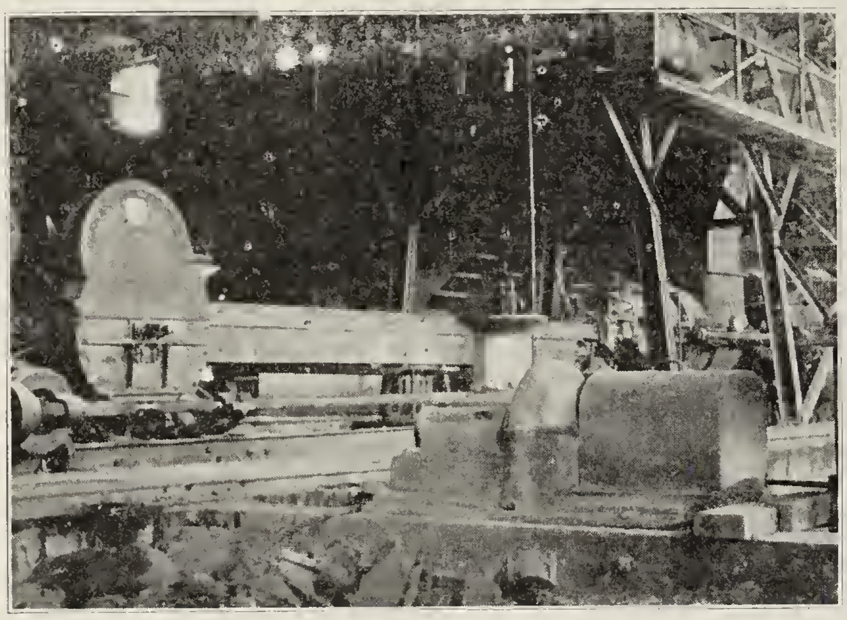
Experiments are in progress to develop face brick from certain of these clays, and present results indicate that a satisfactory product will be obtained. The purpose of this work is to produce a vitreous, buff-face brick, which type of brick cannot be made from materials at present in use in the South. The brick dry well and when properly made burn to a pleasing buff without checking.

Semi-commercial scale tests at two plants show that several of the Georgia clays can be used in floor tile bodies. In wall-tile bodies a much smaller proportion of clay is desirable to prevent checking. Factory tests on whiteware and electrical porcelain are in progress.

Management and Superintendence

CAR PULLER PUT TO GOOD USE

In the photograph published here is shown a Mead-Morrison car puller which is doing very effective work at the Burnham Brothers Brick Works, South Milwaukee, Wis. The car puller is an electrically operated capstan-like device and the "spool" performs the same function as the drum on a winch. At the Burnham Brothers plant this device is used to pull loaded dryer cars at the off-bearing belt. Green brick are loaded seven cars at a time and the car puller is used to draw this string of cars towards the dryer track the distance of one full car, as the last car becomes fully loaded. This car is then detached from the string and pulled the rest of the distance to the dryer track which runs at right angles to the track running parallel with the off-bearing belt.



Electric Car Puller in Use at Burnham Bros.' Brick Works, South Milwaukee, Wis.

The car puller saves considerable time in moving the loaded dryer cars of green brick and makes possible the continuous operation of the brick machine since it is not necessary to take the hackers from the off-bearing belt to have them move the cars. This is a considerable item when it is realized that brick are manufactured on the brick machine in use at Burnham Brothers plant at the rate of over 100,000 per day.

⁂

ALIGN BEARINGS ACCURATELY

Accurate alignment of bearings is an important factor in safety and in economy of operation. Frequent inspections of bearings and hangers are desirable. They should be so equipped with oiling apparatus that there will be no occasion for the oiler to come into dangerous proximity with shafting when it is in motion.

⁂

INEFFICIENCT BELT TRAINS COST POWER

Just a short time ago I was in a plant where a steam engine drove a main shaft by means of a belt, the shaft running thru a wall and carrying power into an adjoining room. The efficiency of that drive was, say, 80 per cent. From that shaft a second line shaft was driven, the efficiency of which was, say, 80 per cent. A third shaft near the floor was driven by this second line shaft. We will again call the efficiency of that drive 80 per cent. Then came a belt twist for the purpose of turning shafting that was hung at right angles to the first shafting. The efficiency of this quarter turn drive was, say, another 80 per cent. The power was then carried to another line shaft, and so on to the farthermost end of the room. I did not count the number of belt trains, but am sure there were at least eight and perhaps ten of them. In all my experience with belts I do not remember seeing as glaring an example of wasted power thru belts as I saw in this plant.

How Efficiency Decreases

Assuming the efficiency of each unit drive to be 80 per cent. and that the number of units or trains is ten, we must multiply 0.80 by itself ten times as follows:

$$0.80\text{x}0.80\text{x}0.80\text{x}0.80\text{x}0.80\text{x}0.80\text{x}0.80\text{x}0.80\text{x}0.80\text{x}0.80 = 0.107$$

In other words, the overall efficiency of the drive from end to end is less than 11 per cent., which is surely too low an efficiency to sanction, these days.

One of the machines driven by the sixth train requires about 20 horse power for its propulsion. After six trains it is easy to compute the efficiency of the transmission line to be about 25 per cent. The power generated by the engine to drive this machine was therefore:

$$20 \div 0.25 = 80 \text{ hp.}$$

Direct Drive Saves Power

Now, if a rope drive had been installed from the engine direct to this machine it would have been possible to negotiate the turn thru 90 deg. and yet attain a much higher efficiency than 25 per cent. Let us assume then an efficiency of 80 per cent. could be effected with a rope drive of this kind. The power required of the engine would therefore be only,

$$20 \div 0.80 = 25 \text{ hp.}$$

In other words, the power saving would be

$$80 \text{ hp.} - 25 \text{ hp.} = 55 \text{ hp.}$$

Another way to surmount this evil is to install group drives. Let the engine drive a generator and then distribute the current to motors scattered here and there over the plant. The efficiency of the generator should be at least 90 per cent. and the motor the same. The overall efficiency of the electric drive will, therefore, be very close to 80 per cent. From one of these motors one can therefore run a belt and get a high ratio of power to the driven machine.

When Belt Trains Are O. K.

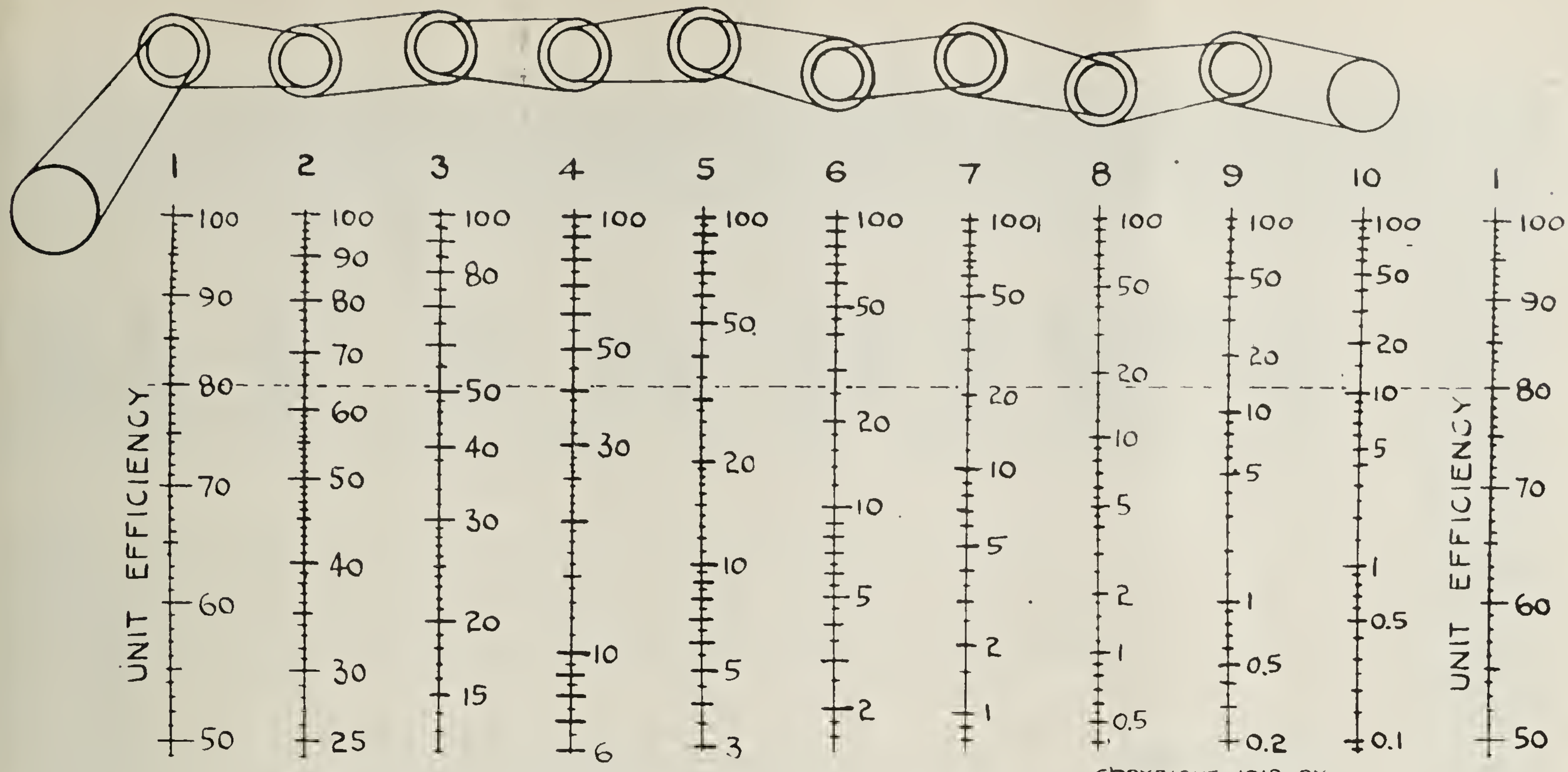
Belt trains aren't so "terrible" where the machines driven at the end do not consume much power. But where the machine uses as much as the above machine required, it is good engineering to get the power to the machine more efficiently—by a more direct route—mechanically or electrically.

Believing this subject to be important enough to warrant further elaboration, the writer has developed a chart which is shown herewith.

By simply stretching a thread across the chart horizontally from left to right the reader is enabled to determine the overall efficiency of any train, assuming an average efficiency for the units.

Reading the Chart

Above the chart is shown a train of ten belt units, beginning with a driven pulley. This is shown only to explain the chart more clearly. And above each column is a figure giving the number of units in the train up to and including that column. For example, what are the efficiencies at the various points where the unit efficiency is 80 per cent.?



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By Means of This Chart It Is Possible to Determine the Overall Efficiency of a Belt Train

The dotted line drawn horizontally across the chart shows the answer at the points of intersection with the various columns. It will be noted that the columns at the extreme left and right are both marked "1." They are identical to insure an accurately horizontal line. Thus where the unit efficiency is 80 per cent., connect the 80 and the 80 in these two columns as shown.

At the end of the second unit it will be noted that the overall efficiency is 64 per cent. At the end of the third unit, 51 per cent. At the end of the fourth unit, 41 per cent. At the end of the fifth unit, 33 per cent., and so on. At the end of the entire train of ten units, as computed above, the overall efficiency is very close to 11 per cent.

Importance of Good Power Transmission

This chart shows another interesting thing clearly with regard to efficiency: the higher the efficiency in a unit, the higher the overall efficiency. Thus if 100 per cent. efficiency were attainable there would be no loss from one end of the train to the other. With 98 per cent., which is attainable with carefully aligned shafting, properly treated belts, high class bearings, proper lubrication, and so forth, it is possible to transmit 80 per cent. of the initial power thru the train of ten units. But where the unit efficiency is as low as 50 per cent. the overall efficiency is only one-tenth of one per cent. That is, if 1,000 horsepower were delivered by the first pulley, only one horsepower would "get thru." So, don't scoff at high efficiencies. Power leaks away at a surprising rate where efficiencies are low. If belt trains are necessary, and if much power is transmitted, make the efficiency of each unit as close to 100 per cent. as possible. The writer does not know of a higher efficiency than 98 per cent. in actual authoritative tests. Now that ball bearings, pulleys and belts are better, however, 98 per cent. can probably be beaten.—W. F. Schaphorst.

* * *

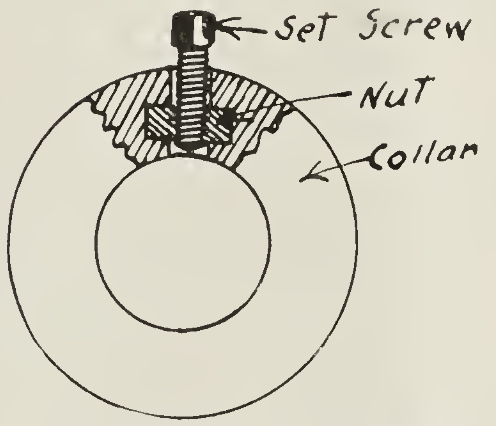
BUYS MACHINE TO LAY TILE HE MAKES

Dommick Watery, manager of the Kewaunee (Wis.) Brick & Tile Co., is developing a profitable side line since the purchase of the only tiling machine in Kewaunee County. The machine is operated by steam and is capable of digging a trench from 17 to 20 inches in width and to any depth. During his spare time Mr. Watery has been laying tile for farmers in that vicinity and this fall developed that service extensively. He contemplates going after that business next spring and thereby help increase the demand for tile.

* * *

MAKING A COLLAR FROM BABBITT METAL

The sketch herewith shows how a collar can be made out of ordinary babbitt metal. It will serve the purpose about as well as any other collar.



How to Place Set Screw When Making Babbitt Collar

Before pouring the babbitt metal place a nut at the top in the position indicated with the set screw already in it. The set screw can be wrapped with paper or covered with putty so that the babbitt will not bind it tightly in place.

If a non-projecting set screw is wanted same can be made as readily as a projecting screw type.

Molds may be made entirely of pasteboard and paper or pasteboard and wood.—N. G. Near.

* * *

EMPLOYMENT LESS—WAGES REMAIN HIGH

Due to peculiar economic conditions in the United States at present, which have just been disclosed thru the researches of the National Industrial Conference Board, of 10 East Thirty-ninth street, New York, wages are again at the peak point in the face of the fact that employment as a whole, measured by the latest available returns, is falling off. Reports received by the conference board from more than 1,600 industrial plants in all parts of the United States indicate that, measured by their purchasing power, wages have regained their greatest height which was first reached last June, when they were, based on hourly earnings, about 39 per cent. above the pre-war month. Average weekly earnings of all wage-earners which stood at $26.66 in July fell off slightly to $26.59 in August.

PRODUCERS

Here is "Producer and Saver" No. 384 of The American Line. It is fully covered by patents and when you install it you get protection as well as "production."

The American No. 384 Grinder is "Producing" 400 tons of Hard Shale ground for the Pug Mill in a day. This is the record of the Salt Lake Pressed Brick Co., Salt Lake, Utah.

When it comes to saving, J. B. Cohoon, Manager, says: "We have eliminated ten men. It easily does the work of four nine foot pans on one-fourth the power. We save a lot of grief and in a year have needed no repairs."

Truly this *is* a "Producer and Saver."

The Salt Lake experience is only one of a number. We will be pleased to give you any information you may desire on this "Producer and Saver." It can't help but pay for itself in your plant if you use two or more pans.

The American No. 384 Grinder is in a class by itself.

Write us regarding this or any of our long line of "Producers and Savers" for Clay Plants.

The Hadfield-Penfield Steel Co., Bucyrus, Ohio

Builders of "The American Line"

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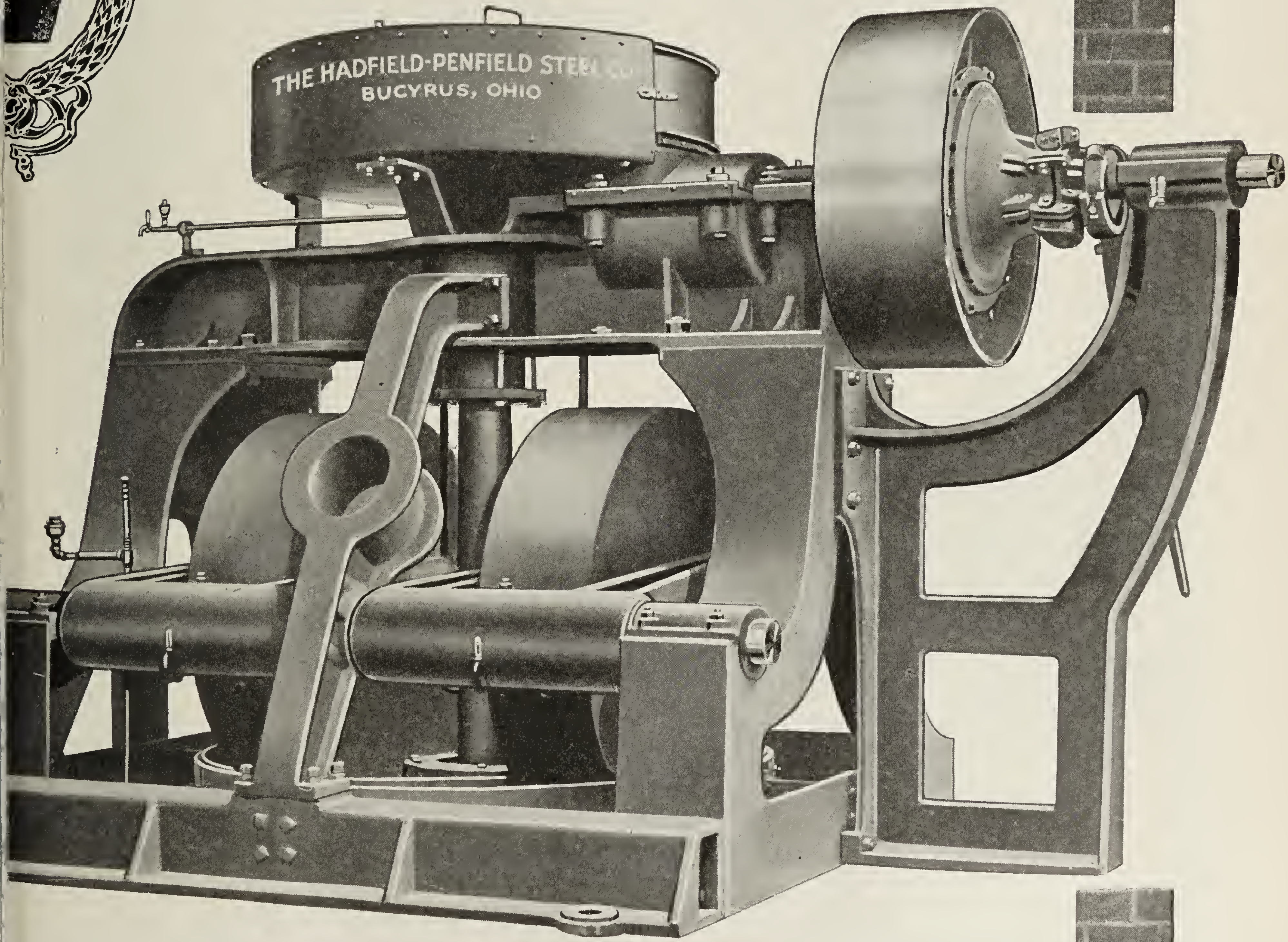


Producer and Saver No. 384 (Patented)

Gates Stokers Save Money

Out of every dollar spent for coal used in the old fashioned hand-firing of kilns, from 20 cents to 50 cents is needlessly wasted.

The Gates Automatic Kiln Stoker

Produces higher percentage of perfect wear;

Gives accurate control and distribution of heat;

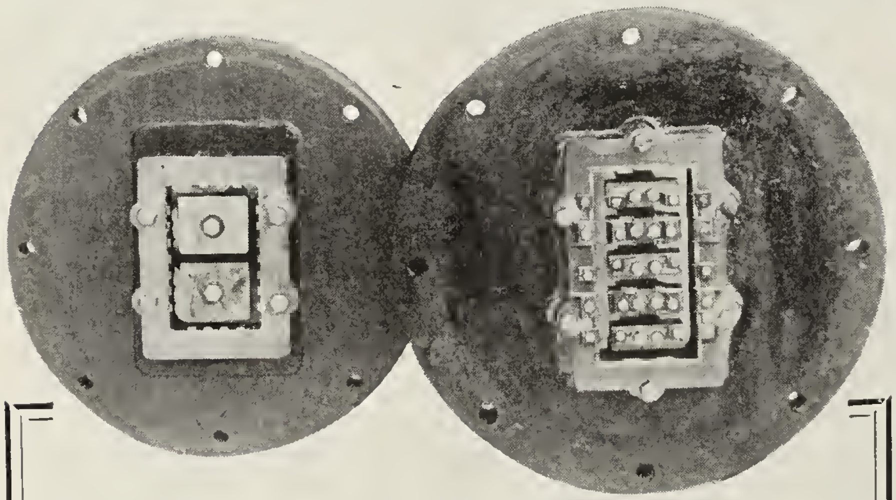
Increases output and efficiency;

Uses soft coal screenings instead of high grade coal.

The above are honest statements of facts which we are willing to prove to your satisfaction.

CLAY SERVICE CORPORATION

128 N. Wells St., Chicago



We Can Furnish It

No matter if it is a die of ordinary construction or of intricate design or construction, we can furnish you the best.

We do not build a universal die of one construction to meet all machines and material but build them to meet YOUR individual requirements.

We use the best of materials in the construction of our dies.

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When you want dies of sterling quality—dies scientifically built—then equip with the Lincoln dies.

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MINERVA, OHIO

Questions and Answers

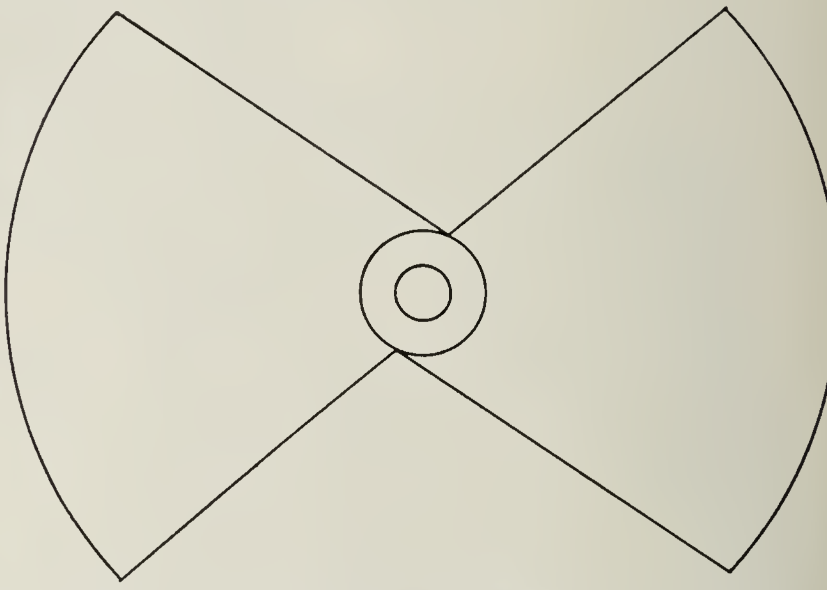
Best Authorities in Every Clay Working Branch Are Called Into Consultation — Their Advice Is Free to You, Thru These Columns

Address all communications intended for this department to "Editor Questions and Answers, care of Brick and Clay Record," Chicago

HAS TROUBLE MAKING STRAIGHT TILE

1,077.—*Australia.—We are running a small brick plant and are using a wire-cut brick machine to produce our goods. Lately there has been a call for agricultural drain pipe, which we have started to produce, but we are having trouble in making a straight pipe on account of the machine not pushing them out straight—they come out snake-like. We have lengthened the mouthpiece to put the dies a little further from the propeller or pushing knife, but this has not made much difference. We make 3 two inch pipes at a time, 2 three inch pipes and 1 four inch pipe. Our die plate is about 1¼ inches thick. We thought perhaps a different class of propeller might remedy the trouble. Could you put us right?*

Our experience in the manufacture of drain tile leads us to believe that the difficulty is due mainly to the fact that you do not have enough propeller blades in your auger machine. We would suggest that you use your wings or at least three wings instead of only two as illustrated in your letter.



Two Bladed Propeller Used by Australian Manufacturer with Unsatisfactory Results

We are taking the liberty of sending a copy of our Clay Products Cyclopedia, item 192-A, on page 35, containing some information which we think would be of great value to you in the production of your tile.

⁂

WHAT IS PREWAR COST OF PLANT?

1,076. *Washington, D. C.—Can you advise me as to the prewar cost of a common brick plant (stiff mud) equipped with brick machinery and best type kilns for gas burning, dryers, steam shovel, and so forth, with a capacity of 100 M per day and also one with a 200 M per day capacity? We would like the approximate cost in the middle west and also the average repair and depreciation cost per M brick. We would like this information on a plant built between 1905 and 1910. If you cannot give me this information, can you suggest where I can get it, or if some of the older copies of Brick and Clay Record have record of cost of plants?*

It would take a great deal of space and a great deal of research work to give you all of the information for which you ask in your letter of September 28. We would be pleased to do this for you if we had any of the information in this office or knew where we could obtain it in a reliable way without an extensive investigation.

When you talk of cost of a brick plant, the answer must vary according to conditions. Naturally the cost will be different if up-draft kilns are contemplated than if down-draft kilns are used. Likewise the type of dryer will vary. A tunnel dryer will naturally cost more than an open air dryer. Again the distance the clay deposit may be from the plant will have a bearing on the decision and on the cost.

Again the average repair and depreciation cost per M varies according to the location of the plant, the quality of the management and the permanency with which the original plant was built.

The only way we know to obtain this information is to visit a number of plants and ask them what their plants cost if they were built in the years that you speak of. Another way would be to ask some of the machinery manufacturers as they are familiar with some of the details and may have record of actual construction costs. You can obtain these names and addresses from Brick and Clay Record's Buyer's Guide, so that we will not take up space to reproduce them here. For your convenience we are mailing you the current number so that you can obtain these names and addresses. A good ceramic engineer and clay plant builder could also help you.

⁂

DIFFICULTY MAKING VELVET BRICK

1,075. *Pennsylvania.—We have recently installed a new brick machine and an automatic side-cutter, and we are trying to make a velvet texture brick. Previously we used a reel-cutter and made a tex brick of a good velvet appearance on it; but we are unable to make a brick of as nice a velvet appearance as on our former equipment. The brick from our new machinery is much nearer to a smooth-faced brick, even tho we use the same wire arrangement on the new machine as we did on the old one. Our materials are also the same. Our operator claims that he could run a much softer column on our old machine and that this accounts for the more desirable velvet appearance. He claims that he cannot run the column soft on the new side-cutter, and that if he did, buckling of the column would result, which in turn would result in brick of different sizes. Is he correct in this claim, and what can be done to get the former velvet appearance?*

We have not had the opportunity of giving your question full and complete study, but offhand we would suggest that you might try using a stiffer wire and cutting about three-fourths to one-fourth inch off of the column. Perhaps this way you can get a better texture. This might entail making your die larger, but before doing this we would suggest that you try it on your regular size die for a short run and use the small size brick for construction purposes around the yards.

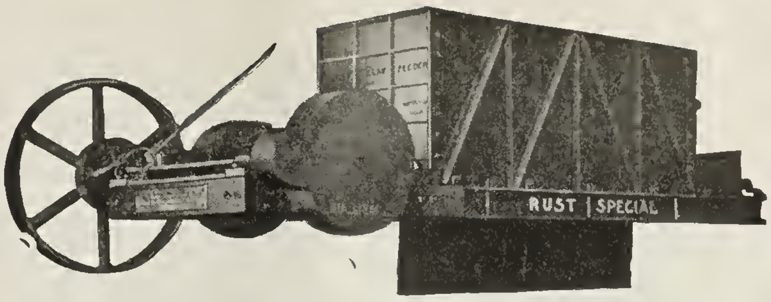
Another suggestion that comes to us is to weave a wire around the wire stretched across the mouth of the die.

Your operator is undoubtedly right that it is necessary for him to use a stiffer column on the new side-cutter and that therefore the column stiffness prevents achieving the desirable velvet appearance. It is true that a softer column would be likely to buckle on the automatic side-cut machine.

This question was submitted to C. Forrest Tefft, assistant factory manager of Fiske & Co., who says:

"The problem submitted in reference to making a satisfactory velvet texture brick is a hard one and it really appears to me that it is one that should be answered by the manufacturer of the new machinery installed.

"There are, of course, several items that affect the appearance of the texture on a brick and some of these are the size



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MARION
"RUST SPECIAL"
Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing Rust Feeder and full line of Marion clay plant equipment.

Marion Machine Foundry & Supply Co.
P. O. Box 395
MARION, INDIANA

"We Are Very Well Pleased With the
BAY CITY
EXCAVATOR"

Says The Mohawk Brick Company, Mechanicsville, N. Y. "It is inexpensive to operate, doing all the work which we want it to do, and we realize that if this machine had not been installed this spring, we would have had considerable difficulty in digging our clay, owing to the present labor conditions.

"We recommend the machine very highly."

Investigate the time and labor saved. Full details on request.

THE BAY CITY DREDGE WORKS
BAY CITY, MICHIGAN
Eastern Office: 302 Broadway, New York City

"Sturtevant Drying Systems
Are Economical, Efficient, and Sure"

YOUR drying process may appear too complicated—or perhaps too simple for an efficient drying system.

But it will cost you nothing to have competent engineers suggest a method to obtain better results.

These men work in close cooperation with our laboratory where drying specialists solve problems peculiar to the ceramic industry.

You may obtain this service if you desire. Our engineer will call at your request.

B. F. Sturtevant Company
HYDE PARK BOSTON, MASS.

749

Announcement

The American Dressler Tunnel Kilns, Inc., will have a message for the clay products industry in the near future which will be of considerable interest.

The message will appear in this paper at the earliest possible moment. In the meantime we are, as usual, ready to serve you.

American Dressler Tunnel Kilns, Inc.
1740 East 12th St. CLEVELAND

of the wire used in making the texture, the speed of the column and the temper of the column.

"I would not attempt to offer a remedy for this manufacturer's trouble without knowing all of the conditions in detail."

W. F. Demuth, president, Canton Brick & Fireproofing Co., states:

"Regarding the making of velvetex brick, I do not understand why the change in their machinery should have any effect on the quality of their brick. I don't see why if the shale is pugged in the same way as formerly they should not get the same results. Any matt texture brick must necessarily be pugged very wet to obtain the best results. They may have changed their puggers or machinery men. The fault must be thereabout somewhere."

S. W. Hardy, superintendent of the Fredericksburg (Ohio) Mining & Clay Products Co. who saw the above query in the November 13 issue of Brick and Clay Record offers the following suggestion: "I have manufactured velvet brick for the past 15 years and am still producing this type of brick. I at one time had the same trouble which the Pennsylvania manufacturer describes. This was caused by not having the facing wires set far enough away from the mouth of the die. I had the Bonnot Co. make for me a die with the face plate 16x18 inches, with lugs cast on so that the wires were three-quarters of an inch away from the die. This helped matters considerably.

"You will find that the vibration of a machine and of the wire will help a great deal in getting a good texture. We manufacture a standard size face brick and my die at the discharge end is 9½x4½ inches, cutting off one-half inch from the top of the column and one-quarter inch off of each end. This makes the brick 9x4x2½ inches in the green. The shrinkage is better than one inch to the foot.

"I find that by using a number nine wire on the face and a number 12 on the headers or ends, I get a better texture and my corners are not broken off. We also have a plow bolted on the face plate which takes care of all the waste clay which is cut off the top of the column."

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

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F. HAZELWOOD LEAVES BUREAU

Another loss to the Bureau of Standards in its Ceramic Department is made known in the announcement that F. Hazelwood has left the Bureau and is now with the Buffalo (N. Y.) Pottery Co.

DEATH TAKES C. A. SMITH

Charles A. Smith, superintendent of the plant of the B. Mifflin Hood Brick Co., at Rome, Ga., formerly the Rome Fireproofing Co., until acquired by the Hood concern, died this month at his residence in Atlanta after a brief illness. He was 56 years of age, and an expert in brick manufacturing, with which industry he has been affiliated in the South for a number of years.

KING JOINS MASON CITY B. & T. CO.

James A. King, editor of the National Reclamation Magazine of St. Louis, Mo., will take charge of the advertising department of the Mason City (Ia.) Brick & Tile Co. Mr. King has had considerable experience in the drain tile business, particularly on the merchandising end and it is thought that his addition to the Mason City Brick & Tile Co. will prove very advantageous to them. Mr. King was connected with the Mason City company at one time about seven years ago.

SAYS SOUTH BETTER OFF THAN EAST

L. L. Stephenson, president of the Stephenson Brick Co., with plants at Lovick and Childersburg, Ala., when interviewed regarding business conditions, said, "Business is just fine. I have just returned from a trip east, and the fact struck me that southern builders ought to find reason for rejoicing at their situation, compared to that of builders in the East. Brick made in New York state sell for $24 per thousand, and we are making better brick in Alabama that we are selling for $12 per thousand. Labor costs are 200 per cent. higher in the East than in Alabama."

VITRIFIED PRODUCTS NOW OPERATING

Recently San Diego's new industry, the Vitrified Products Corporation, began operations. The plant is on a 23 acre site, with separate railway sidings for raw material and finished products. The loading tracks are sunk to car floor level with the kiln floor. The Vitrified Products Corporation's raw material deposits include a 175 acre tract of shale clay deposits on the Santa Fe Railway. An electric loading shovel with a capacity of 300 tons per day has been installed on this site. The clays in this deposit are for common brick, vitrified sewer brick, paving brick, interior and exterior tile and sewer pipe.

SHOTWELL GOES FROM BRICK TO DRYGOODS

Howard Shotwell, advertising manager of the Denver (Colo.) Fire Clay Co., has been appointed sales and advertising manager of the Isbell-Kent-Oakes Drygoods Co. of Denver.

LA JUNTA IMPROVING PROPERTY

The La Junta (Colo.) Clay Products Co. is improving the appearance of its plant at least 100 per cent. by building an ornamental fence and gates of brick. This plant is working to capacity to keep up with the orders, according to S. A. Kammerlohr, manager.

LAUREL ENTERTAINS AT CLAM BAKE

The Laurel Brick & Sand Co. of Middletown, Conn., entertained about 100 people, employes and friends at a clam bake recently at its Maromas plant. The dinner was followed by an inspection of the plant.

GEORGIA PRODUCES HALF COUNTRY'S CLAY

S. W. McCallie, state geologist of Georgia, addressing a recent meeting of the Civitan Club at Macon, Ga., stated that statistics compiled by his department show that Georgia now produces more than one-half of the clay in the United States, but that there is a great deal of room for expansion of the manufacturing end of the industry as most of this clay is sold outside of the state, whereas Georgia should really be the largest clay products manufacturing center in the country.

DUNWODY ADVERTISING IN SUNDAY PAPERS

An advertising campaign covering Georgia, Alabama, South Carolina and Florida has been placed by W. E. Dunwody, president of the Standard Brick Co., Macon, Ga., thru the Hollow Building Tile Association. The Sunday editions of ten newspapers are being used. 22½ inches of space was used weekly in every publication on the list, starting October 28. The Standard Brick Co. plans to reach practically every architect, engineer, builder, dealer and the better class consumer thruout the entire territory which is served thru this advertising.

GEARS

SMOOTH running; correct in design, accurate and true to pitch, Caldwell gears are bound to please you. We make all types—machine-molded, cut tooth, mortise gears, worm gears, etc. Caldwell Promptness is Traditional. It is at your service. Our stocks assure prompt shipment.

Let us figure with you next time you are in the market.

H. W. CALDWELL & SON CO. LINK-BELT COMPANY, OWNER
Dallas, Texas, 709 Main Street—Chicago, 17th Street and Western Ave.
New York, Woolworth Bldg.

CALDWELL

FOR SALE

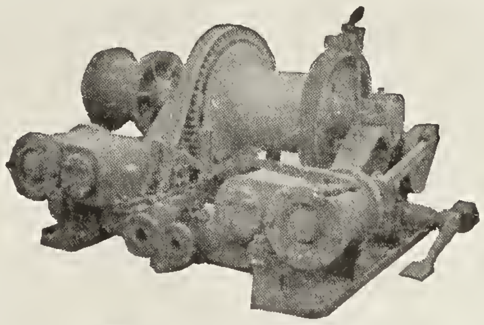
BARGAIN

Emerson, Bratingham Hoists

UNUSED

DOUBLE CYLINDER, SINGLE
DRUM, IN FIRST CONDITION

$125.00 Each F. O. B. Chicago



Capacity 10,000 Pounds
IMMEDIATE SHIPMENT
Detailed Specifications Furnished on Application
"QUANTITY IS LIMITED"

Hyman-Michaels Co.
531 Peoples Gas Building Chicago, Ill.

We are headquarters for first class relaying steel rails and angle bars

Dryer, Transfer and Clay Cars,
with Flexible Bearings.
Switches, Turntables and Track.

THE CHASE FOUNDRY & MFG. CO.
COLUMBUS, OHIO

CHASE

CAUCASIAN
OXIDE MANGANESE
Powdered—Granular
For Speckled Effects

PRECIPITATE
CARBONATE BARIUM
For Prevention of Scum
Thereby Producing
Deeper and Richer
Color

THE
ROESSLER & HASSLACHER
CHEMICAL CO.
New York

Chicago
Boston
Philadelphia

Trenton
New Orleans
Pittsburgh

Kansas City
Cleveland
San Francisco

MAY BUILD CLAY PLANT

David H. Kirkland, of Raymond, Ga., who has been identified with the brick and pottery manufacturing industries in the southern territory for some time, is contemplating the establishment of a new plant at Raymond, Ga., for the manufacture of brick, piping, pottery products, and so forth, according to a recent announcement he made. Associated with him are other business men of that section, and it is reported a new company is being formed headed by Mr. Kirkland for the establishment of the new plant, tho details of the company's proposed venture are not as yet available.

SHEFFIELD MAY DOUBLE CAPACITY

The Sheffield (Ill.) Tile works has been closed for the winter season, as the yards are now full of tile. Reports are that the plant will be doubled in capacity before opening it for the making of building brick in the spring.

ILLINOIS BRICK ACQUIRES PROPERTY

The Illinois Brick Co. of Chicago, recently acquired title from Edward S. Felsenthal to 493 feet on West 117th Street, 514 feet on Wood Street, 716 feet on West 118th and 661.8 feet on Woodland Avenue.

BEAVERVILLE PLANT ELECTRIFIES

The brick and tile plant at Beaverville, Ill. has been remodeled and electric power installed. The changes were made this month without serious interruption to its production schedule and the plant is now prepared to operate day and night to keep up with its orders.

BRICK SALES ENORMOUS IN CHICAGO

Up to date the face brick sales in Chicago for 1923 already exceed 135,000,000. This equals the amount sold during all of 1922 and there are still some weeks to go. The sales of common brick during the same period were from 600,000,000 to 900,000,000, the latter being the nearest approximate estimate of the Chicago Brick Exchange.

STAHL NEW PREXY OF WHITE HALL

C. B. Stahl was unanimously elected president of the White Hall (Ill.) Sewer Pipe & Stoneware Co. at a special meeting of the board of directors held recently. Mr. Stahl succeeds Gustave Bischoff, Sr., of St. Louis, who died last August. This promotion was awarded Mr. Stahl by reason of his faithfulness and efficiency in the management of the company during the past five years in the position of general manager.

Mr. Stahl relinquished the office of secretary and treasurer immediately following his election to the presidency. H. W. Shirley succeeded him as secretary and treasurer. The present offices of the company are: president and manager, C. B. Stahl; first vice-president, H. O. Tunison, second vice-president, Gustave Bischoff, Jr.; secretary and treasurer, H. W. Shirley.

REDUCE INDIANA SEWER PIPE RATES

An eight per cent. freight rate reduction on sewer pipe manufactured at Brazil and Mecca, Ind., and a 20 per cent. rate reduction on other clay products, such as wall coping and chimney bonnets, have been ordered into effect January 1 by the Indiana public service commission. New rates stand on the basis of 80 per cent. of the sixth-class rates. The reductions will apply on all such shipments in Indiana from Brazil and Mecca.

MAY ORGANIZE CLAY COMPANY IN IOWA

Lawrence Whalen and John Heim are contemplating erection of a brick and clay products plant on the George Heim farm, a mile north of Eagle Point, Ia., it is said.

They will organize a stock company and begin operations if sufficient financial support can be found. The farm land, it is said, is rich in clay deposits.

PAVING FLOAT TAKES FIRST PRIZE

Pictured here is a handsome float advertising Murphysboro paving brick, which captured first prize in competition with 67 floats in the parade. The following letter from C. D. Crossman, assistant secretary-treasurer of the Murphysboro (Ill.) Paving Brick Co., describes the float and the occasion of its use:

"You might be interested to learn that this company entered an industrial float in the Hallowe'en parade held at Carbondale, Ill. This is on the same line as the Mardi Gras festival at New Orleans and the Veiled Prophet at St. Louis—and to Southern Illinois is about as important as either one of these.

MURPHYSBORO PAVING BRICK CO.
PAVE ONCE! PAVE RIGHT! PAVE WITH BRICK!

Attractive Float Advertising Paving Brick. It Won First Prize in Parade of 67

"There were 67 floats in this parade, and our float was successful in capturing the first prize.

"The front end of this truck contained a miniature kiln lit up with electric lights to imitate a kiln burning. The last half of the float was occupied by two large colored men laying brick, which brought home the idea directly to the audience of paving streets—which is the part of the business they are mostly interested in. The color scheme thruout was Hallowe'en colors with the exception of the hood and cab of the truck which were decorated in the U. S. colors."

ROCKFORD ADVERTISING TO FARMER

The Rockford (Ia.) Brick & Tile Co. is placing a very attractive series of advertisements in the farm papers in that territory, telling the farmer, in an effective manner the advantages of using Rocktex hollow building tile, drain tile and brick.

FORM COMPANY AT FT. DODGE

The Johnston Clay Works at Fort Dodge, Ia., has been incorporated with a capital of $600,000. D. G. Johnston is named as president, William Johnston, vice-president, and E. J. Halligan, secretary and treasurer.

DRAIN TILE SALES ARE GOOD

H. Herpel, of the Southern Brick & Tile Co., Louisville, Ky., stated that the company was getting a good volume of small orders, and that he believes winter business would be better than usual. For the past three years Mr. Herpel has been spending most of his time at the Louisville office and yard, rather than at the plant. He stated that the company now has several crews out installing drain tile. While farmers have been hard up for ready cash and complaining over poor prices for their products, still they have managed to find money for tile installation, and this department of the business has been quite active.

WANT CLAY PLANT IN MIDDLESBORO, KY.

Middlesboro, Ky., is to have a brick plant in the near future if the plans of the local business men are carried

Increase the value of your product by improving the color with

LAVINO
BRAZILIAN MANGANESE

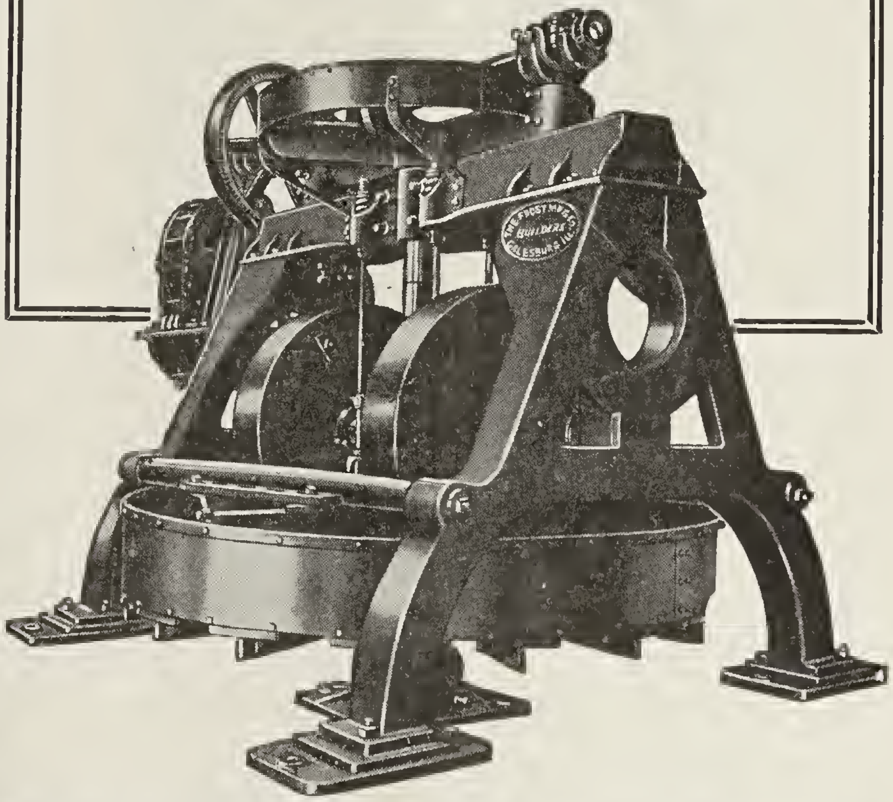
"Best for Face Brick"

Economical
Adaptable to any Clay
Intense Staining Powers
Various Effects Obtainable
Uniform Analytically and Physically

Liberal samples and full information gladly furnished upon request.

E. J. LAVINO and COMPANY
Bullitt Building Philadelphia, Pa.
Grinding Plant: Plymouth Meeting, Pa.

BETTER QUALITY WARE
That is the result when Frost Dry Pans are put on the job.
THE FROST MFG. CO.
GALESBURG, ILLINOIS



QUALITY ECONOMY SERVICE

You Do This But Once—

When you install ROBINSON KILN BANDS on your kilns. They will eliminate the chances of your kiln walls bulging and cracking, thus making them leak-proof. Many satisfied users in the industry.

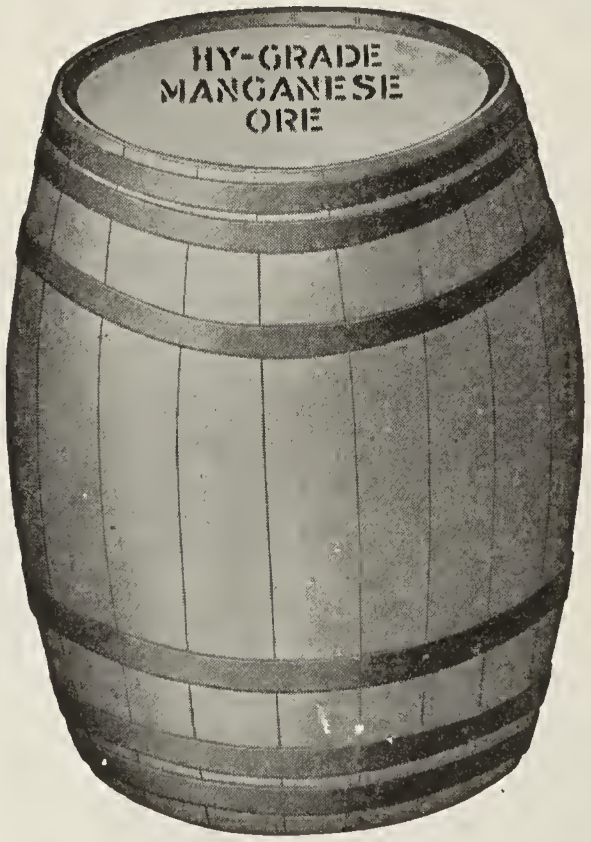
Write for full data, also for catalog of clay machinery.

FRANK H. ROBINSON, Inc.

Dryer Cars and Clay Working Equipment

918-920 Behan St., N. S.

Factory and General Office PITTSBURGH, PA.



HY-GRADE MANGANESE CO.
WOODSTOCK, VA.

Miner and Grinders

Especially Prepared for Brick Making

out. As yet no definite steps have been taken toward the actual organization of the corporation, however. George Fisher has visited Knoxville in the interest of the proposed enterprise. Data is being collected concerning the probable cost of such a plant and a competent man is being sought to take over the management of it. The proposed site, consisting of four or five acres, is a suitable location, it is stated, as the clay there has been tested by experts and it is indicated that brick of excellent quality may be made from it.

BOILER TROUBLE HOLDS BACK PLANT

The Louisville Fire Brick Works recently lost a couple of days at its Grahn, Ky., plant as a result of a boiler breakdown, but has been operating on a capacity basis for some months past, and is having no let up in its present heavy volume of orders.

SACO TO MAKE BUILDING PRODUCTS

The Saco (Me.) Brick Co., for some years engaged in the manufacture of brick exclusively, will hereafter also devote its energies to the manufacture of other clay products used in building construction. The company has erected a new storehouse abutting the freight yards in Saco.

AFRAID BLASTS WOULD HURT KILNS

Winslow & Co. of Portland, Me., recently protested blasting of the hulk of a steamer wrecked near its brick kilns and as a result the port officials ordered the blasting to cease. The company was fearful that the heavy blasts would open cracks in the kilns.

BUILDING NEW PLANTS IN MAINE

An impetus has been given to the brick manufacturing business at Auburn, Me., due to the unusual quality of clay to be found in the section of Auburn called Danville Junction. A new plant has been built and the total annual output has been more than doubled. Recently an announcement was made that plans are under way for the opening of a third brick plant nearby, eight acres of which are to be leased from A. F. Redman by H. B. Richie of Aroostook, who expects to expend $750,000 on it. It is stated that negotiations are also under way for the opening of a fourth plant. The shipment from the two yards this season totals about 2,500,000 all water-struck brick.

LITTLETON PLANT SOLD

The Littleton (Mass.) Unit Brick & Tile Co. has been sold to the Baldwin Brick Co.

TWO MORE PLANTS TO BURN WITH OIL

The Bridgewater (Mass.) Brick Co. has installed oil burning equipment to take the place of the old-fashioned wood burning methods. The Holyoke Brick Co. of Willimansett, Mass., has also installed an oil burning system to take the place of wood.

VERSAILLES, MO., PLANT SHUTS DOWN

The Versailles (Mo.) Fire Clay & Brick plant, which employs from 60 to 100 persons, recently shut down.

LACLEDE DOUBLES INCOME IN 1923

The net operating income of the Laclede-Christy Clay Products Co. of St. Louis, Mo., for its fiscal year ending June 30 was $172,436 compared with $81,452 the previous year, according to the annual statement of the company just made public. Special charges and expenses totaled $48,767 for the year against $62,512 the previous year, leaving $123,669 to be credited to the surplus account. In 1922 this credit was but $18,940.

The surplus of the company on June 30 was but $736,187 compared with $825,519 the year before but this was due to the necessity of deducting $139,669 for loss on the sale of unproductive land. The charge off for repairs and the amount set aside for depreciation of the plant and clay lands was larger this year than in the previous year. The statement shows that current assets on June 30 totaled $1,057,053 with current liabilities of only $342,072.

THIEVES GET $2 FROM CUMMINS

Recently the Cummins Brick & Tile Co., Syracuse, N. Y., was visited by thieves, who after carrying a 300 pound cabinet from the plant, smashed it open with an ax, but were rewarded with only $2 in currency.

WILL BUILD NEW PLANT

A new plant is to be built by the Carlyle-Labold Co. of Portsmouth, Ohio, according to plans of that company.

EXTENDING DRYER 20,000 SQ. FT.

The Evans Pipe Co. of Uhrichsville, Ohio, is adding 20,000 square feet to its drying department.

PLANS MOTORIZING OF PLANT

The Globe Brick Co. of East Liverpool, Ohio, will motorize its entire plant. The company is making various other improvements to increase the efficiency of its plant.

MILLER BUILDING NEW PLANT

The J. A. Miller Tile Co. of Bascom, Ohio, is completing the building of an entire new plant to replace the one burned down in April of this year.

STEAM SHOVEL TO BE INSTALLED

According to the plans of the Fredericksburg (Ohio) Mining & Clay Products Co., a steam shovel will be installed at its plant in the near future.

NEW STORAGE BIN AND STOCK SHEDS

A new storage bin and new stock sheds are being built by the Summitville (Ohio) Face Brick Co. These improvements will aid materially in the work of handling the products.

WANT SHOVEL FOR ALL YEAR WORK

In order to continue in operation thruout the winter, the E. Biglow Co. of New London, Ohio, is thinking about installing a steam shovel.

ROMIG TO PUT IN NEW EQUIPMENT

The capacity of the Romig Clay Products Co. of Uhrichsville, Ohio, will be increased this winter thru the addition of some new equipment.

INCREASES CAPITAL TEN TIMES

Papers have been filed with the secretary of state of Ohio increasing the authorized capital of the Frederickburg (Ohio) Mining & Clay Products Co. from $10,000 to $100,000 to provide for increased facilities.

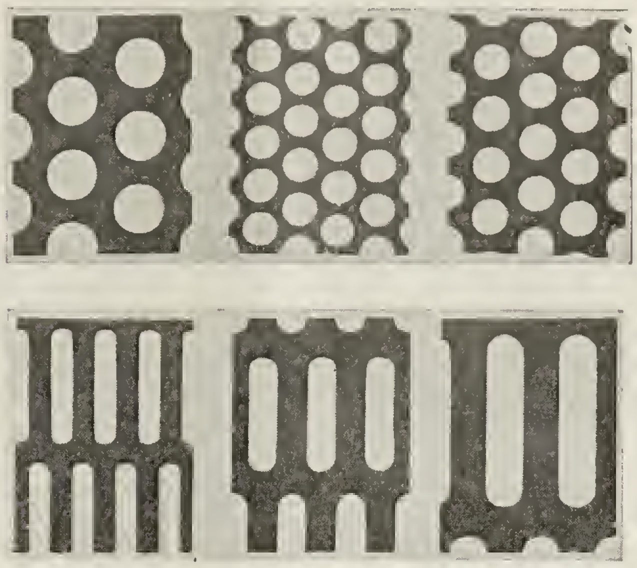
TO ADD SHOVEL TO PIT EQUIPMENT

Improvements and extensions will be made to the plant of the Federal Clay Products Co. at Universal City, Ohio, this winter if present plans of the company are carried out. One of the improvements will be the addition of a steam shovel to the company's present digging equipment.

MAY INSTALL TRANSFER CAR

The Medal Paving Brick Co. of Malvern, Ohio, is considering the installation of an electric transfer car. This company is at present short on dryer capacity and is accordingly considering extensions to the dryer.

Perforated Steel Screens



For Screening Clay, Shale, Sand, Gravel, Stone and Cement

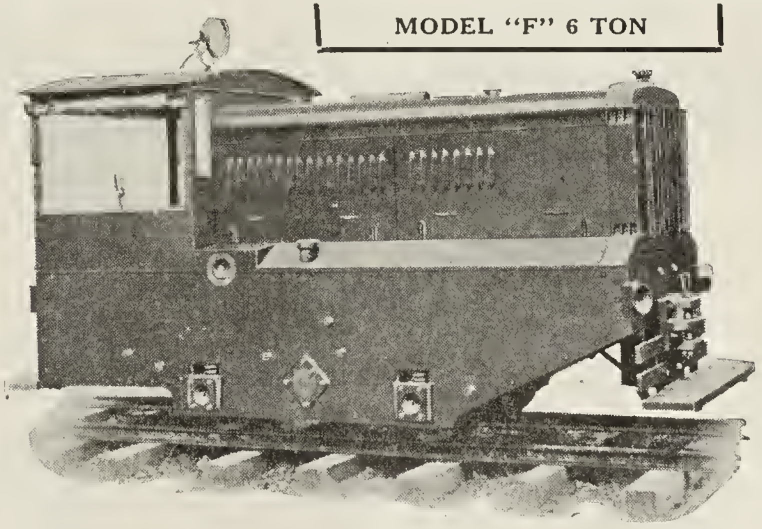
All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

Sheets furnished flat or rolled to shape for revolving screens.

The Harrington & King Perforating Co.

5639 Filmore St., Chicago, Ill.

NEW YORK OFFICE: 114 Liberty St.



The Proof of Durability Lies in Service

The service which users get from the MINSTER Locomotive bears out our contention of "Longest Life, Uninterrupted Service."

Made in 2 to 8 ton capacities.

Write for catalog.

The Industrial Equipment Company

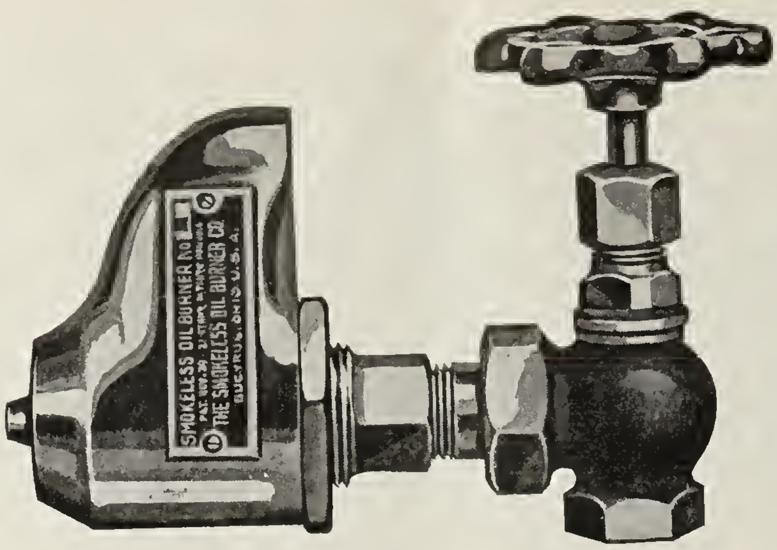
510-512 Ohio St. MINSTER, OHIO

Eastern and Export Department:

The Herbert Crapster Co., Inc., 1 Madison Ave., New York City

MINSTER

INDUSTRIAL LOCOMOTIVES



THANKSGIVING is the time to be thankful—not only personally but commercially. The Brick Men who have their Plants equipped with Smokeless Oil Burners have every reason to be thankful, because every kiln that is burned is uniform. There are no varying results. Every burn is a satisfaction—a real genuine reason for THANKSGIVING.

The Smokeless Oil Burner Co.
BUCYRUS, OHIO

Complete Oil Burning Systems

ROBBINS
the standard of
Portable Conveying Equipment

Wherever there is a conveying job, Robbins Portable Equipment is demonstrating its superiority over old-fashioned hand methods.

There is specific Robbins equipment adapted to the needs of every industry.

Just give us the details of the conveying, loading or unloading problem confronting you, and we will give you our recommendations. There's no obligation. Write today.

Robbins Machinery & Supply Co.
444 W. Grand Ave. Chicago, U. S. A.

"Machinery for Moving Merchandise"

INSTALLING CONVEYORS TO DRY PAN

The Brown Clay Products Co. of Mineral City, Ohio, will put in conveyors to feed the dry pans and will also make improvements to the dryer and kilns. The company is at present completing a reorganization.

CANTON PRODUCES 750,000 DAILY

The brick industry is one of the most important in the Canton, Ohio, district at the present time. It was estimated by men well informed in brick manufacture that the output of plants in the immediate Canton district runs close to three quarters of a million brick a day.

PLANNING $3,000,000 SEWER PIPE WORKS

The Federal Collieries Co. will proceed immediately with the construction of a $3,000,000 sewer pipe works at the former site of the Indian Hill Coal Co., near Uhrichsville, Ohio, a report states. The company has purchased ten acres of clay lands in Mill and Warwick townships, it is said.

SEWER PIPE MARKET UNSETTLED

While general business conditions in the sewer pipe industry have been very active during the last season, with especial reference to the plants in the Upper Ohio Valley, the market is said to be rather unsettled at this time. Yard stocks have not been excessive, so plant managers have advised, as there has been considerable shipping direct from kilns.

HOCKING VALLEY OFFICE MOVED

The general offices of the Hocking Valley Products Co., which operates a face brick plant at Greendale, Ohio, have been moved from Columbus to Logan, Ohio, in order to be closer to the plant. H. F. White, who has charge of the sales will continue in the Columbus office which will be at the same location. The plant is being operated with a full force and shipments are going out briskly.

METROPOLITAN DECLARES EXTRA DIVIDEND

The regular quarterly dividend of $2 a share and an extra dividend of $2 on the common stock, was declared recently by the Metropolitan Paving Brick Co., Canton, Ohio. The regular quarterly dividend of 1¾ per cent. on the preferred stock was also declared. The quarterly common dividend is payable December 1 to stock on record November 15 and the extra and preferred dividends are payable December 15 to stock on record December 5.

WILL NOT BUILD TILE PLANT

Harry Landrum, treasurer and sales manager of the Columbus (Ohio) Clay Manufacturing Co., with offices and plant at Black Lick, east of Columbus denies that he or his brothers contemplate the erection of a tile manufacturing plant at Jefferson, Ohio. He states that a tract of land at that place is owned by himself and brothers but no immediate plans for building a plant have been made. The Columbus Clay Manufacturing Co., is now making hollow building tile and drain tile exclusively. G. F. Landrum is president; F. D. Landrum, is vice-president; Harry Landrum, treasurer and sales manager and P. J. Landrum, is treasurer.

TO ATTEND MEETING IN BODY

Plans of the Cleveland (Ohio) Brick Association, representative of the leading face brick distributors of the Northern Ohio district, call for a 100 per cent. attendance at the joint meeting of the American Face Brick Association and the Face Brick Dealers Association at French Lick Springs, December 4, 5 and 6. The delegation will be headed by Leo A. Krueger, Cleveland Clay Products Co., chairman of the Cleveland group.

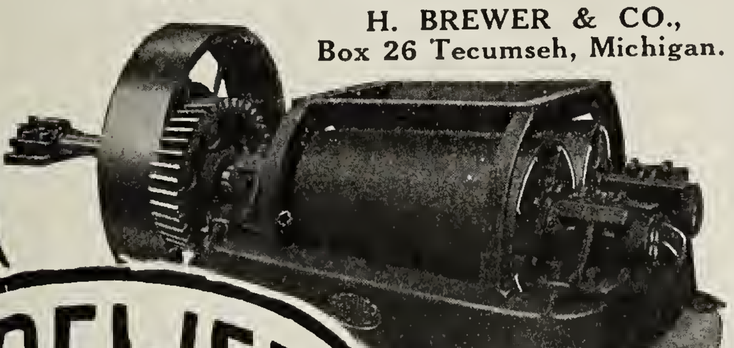
Your Guarantee ! on Clay-Working Machinery

The name BREWER on clay-working equipment is a guarantee of skilled workmanship in a good machine. For back of every BREWER machine stands the experience of nearly three quarters of a century in designing and building clay-working machinery to meet a variety of needs. Block, Brick and Tile Machines, Pug Mills, Crushers, Granulators, Feeders, Disintegrators, Dry Pans, Cutters, Hoists, etc.

Free Engineering Service

If you are about to build or make improvements, or intend using a new clay, get our free clay test. Also ask about our free Engineering Service on your plans and equipment. Complete catalog gladly sent on request.

H. BREWER & CO.,
Box 26 Tecumseh, Michigan.



BREWER

A Mark of Quality Since 1849!

Records Speak Volumes

The unusual qualities of Caldwell Cypress Tanks are proven by their enviable records in all sections of the country. Perhaps this is largely due to the fact that, of all woods, cypress is the one which lasts best outside its native climate.

Thirty years experience in building tanks enables us to couple this remarkable tank wood with workmanship and design that ensure the maximum of tank satisfaction.

Send for Catalog

W. E. Caldwell Co.
Incorporated
2380 Brook St., Louisville, Ky.

Caldwell TANKS AND TOWERS

The FERNHOLTZ Clay Mixer

The Mixer of Superior Ability

The FERNHOLTZ MIXER eliminates buck shot or granulated brick. It so completely mixes the clay, that the brick on both sides of the mold receive the same fineness of material. This insures perfect ware, both in smoothness and color.

It will pay for itself in a short time in improving the quality of your ware.

Write for Bulletin

FERNHOLTZ BRICK MACHINERY COMPANY
ST. LOUIS, MISSOURI

Made for maximum service not merely the average

TRADE JENKINS MARK
Jenkins Bros

The permanent valve service

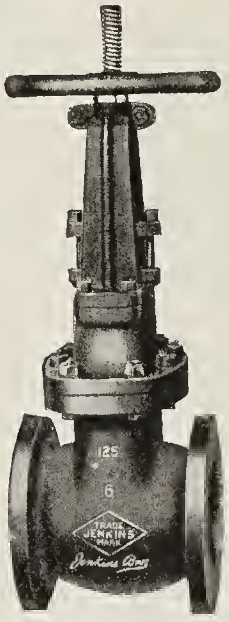


Fig. 651, flanged, Standard Iron Body Gate Valves with manganese bronze spindle.

The reliable performance of Jenkins Valves is due to the infinite attention paid to details in design and construction. Every feature embodies principles which 58 years of manufacturing experience have taught us are the best.

It is by care of this sort that you are assured of safety and permanent service in Jenkins Valves.

Valves in bronze, iron, and steel for all requirements of the Brick and Clay industry.

JENKINS BROS.
New York Boston Philadelphia Chicago
Montreal London

2868-J

Always marked with the "Diamond"

Jenkins Valves

SINCE 1864

RUBBER PRODUCTS

of Merit

Time and experience have clearly demonstrated the merit of Quaker products.

Over 37 years experience in manufacturing and handling rubber goods enables us to furnish the proper rubber articles required in the Brick and Clay industry which will give the best service.

Rubber BELTING—transmission, conveyor and elevator. HOSE for all purposes. ROD and SHEET PACKINGS, GASKETS and PUMP VALVES we manufacture in large quantities.

USE QUAKER PRODUCTS

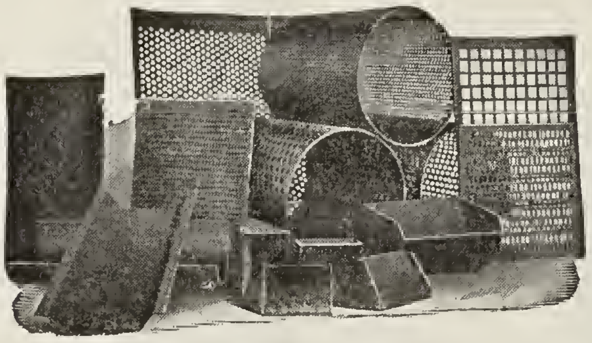
Quaker City Rubber Co.

Mfrs. Mechanical Rubber Goods—Auto Tires and Tubes

PHILADELPHIA CHICAGO PITTSBURGH NEW YORK

HENDRICK SCREENS

FOR ALL PURPOSES



ELEVATOR BUCKETS
CONVEYOR TROUGH and FLIGHTS
STACKS, TANKS,
GENERAL SHEET and
LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL
PLATE CONSTRUCTION

Ask for your copy of the Perforated Metal Handbook

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C. B. MAYHUGH FORMS COMPANY

Thru the efforts of C. B. Mayhugh, Demos, Ohio, a company has been organized with a capital stock of $50,000 at Bethesda, Ohio, to manufacture paving brick and other clay products. Officers of the new company are: President, Dr. D. M. Murphy; vice-president, L. H. Thrall; secretary-treasurer, H. P. Loe; general manager, C. B. Mayhugh. These men with E. S. McMillen form the board of directors.

SELLS INTEREST IN CLAY MINES

F. C. Davis, of Lisbon, Ohio, who with J. R. Sprankle, of Cleveland, owned the entire stock of the Saratoga Fire Clay Co., operating the former Card & Prosser Clay Mines, Hephner Hollow, Lisbon, also the old Power Clay Co.'s mines at Negley, Ohio, and a clay mine at Cannelton, Pa., has disposed of his interests in the property to Mr. Sprankle.

The company has been a large shipper of ground fire clay from the three mines to steel plants and blast furnaces, and during the war period exported a large tonnage to Canada. The sales were distributed among a large number of domestic customers. Mr. Sprankle will continue to operate these clay properties.

OKMULGEE PLANT SOLD AT AUCTION

On November 20, pursuant to an order made and entered on November 7, 1923, all of the assets of the Okmulgee (Okla.) Brick Co., Inc., consisting of real and personal property were offered for sale at public auction to the highest and best bidder for cash, subject to confirmation by the Court. The creditors of the bankrupt estate also held a meeting on November 20 for the purpose of considering the sale and its confirmation.

GETTING CLAY FROM DIFFICULT SPOT

The Elk Fire Brick Co. of St. Marys, Pa., has completed test holes and is putting in a drift to trap the clay now lying in a rather inaccessable place.

FERRO BRICK TO MAKE IMPROVEMENTS

Improvements and extensions are being made at the plant of the Ferro Brick Co., Watsontown, Pa. These new improvements will increase the capacity of the plant as well as make it more efficient and up-to-date.

TO INSTALL COAL HANDLING DEVICE

Lehigh Brick Works of Allentown, Pa., will install an elevator to handle coal and is increasing its output from 15,000 to 100,000 brick per day.

KIER TO PUT IN COAL UNLOADER

A coal unloader will be installed at the plant of the Kier Fire Brick Co., Pittsburgh, Pa. This company is also planning to put in a new wet pan and equipment for loading ground fire clay.

TO ADD CLAY CONVEYORS TO PLANT

The Kittanning Brick & Fire Clay Co. of Pittsburgh, Pa., is planning to install some clay conveying machinery.

WILL INSTALL LABOR SAVING DEVICES

The labor cost of manufacturing clay products will be reduced at the Reading (Pa.) Fire Brick Works thru the installation of some labor saving equipment.

WILL NOT OPEN BESSEMER PLANT NOW

W. C. Iffarth, chief engineer of the Harbison-Walker Refractories Co., reports that work on the plant at Bessemer, Pa., for the manufacture of tile, fire brick, and so forth, will not be started for at least six months.

Blazing The Way To
Decreased
Fuel
Consumption

The increasing application of the Russell Tunnel Kiln is the most convincing proof of the truth of our claims. Our first installation was made years ago when the belief was current that the periodic down-draft kiln was the peak of efficiency. Since that time labor and fuel costs have risen to exorbitant figures and the saving effected by a tunnel kiln assumes a still larger aspect. Large concerns have become responsive to every suggestion to conserve energy as its scarcity and cost become a more imminent problem.

The Russell Tunnel Kiln is serving the clay industry by greatly decreasing fuel consumption due to continuous operation. A few of the benefits that have followed in the wake of Russell Tunnel Kiln installations are:

(1) Fewer kiln losses because of uniform temperatures.
(2) Decrease in fuel consumption.
(3) Decrease in burning time.

Our Engineers will consult regarding your burning problems at your request

Russell Engineering Company
Boston ST. LOUIS New York

Russell

THE MINTER SYSTEM
200 Lbs. Coal per Ton of Ware

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. Saving first cost of 6 tunnels and equipment.

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

DON'T BUILD BEFORE YOU KNOW

The Minter System Plants are Producing the Cheapest Building Material made in America today.

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HOME OFFICE
Albany, Georgia
BRANCH OFFICE
215 Doctors Bldg.
Columbus, Georgia

NEW YORK BELTING & PACKING CO.
FOUNDED 1846
INCORPORATED 1856

Rubber Goods
for the Clay Industry

Test Special Rubber Belting
Indestructible Conveyor Belting
Elevator Belting
Firo Superheat Sheet Packing
Indestructible Sheet Packing
Cobbs Piston Packing
Steam Hose Water Hose
Pump Valves

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Philadelphia Pittsburgh
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Welcome
to New York
and the
Alamac
71 ST STREET AND BROADWAY
A masterpiece of modern hotel creation. Most convenient, yet quiet. A revelation in hospitality and service, offering many innovations including Servidors, taxis, etc.
Unique Congo Room—Medieval Grille and Blue Room Restaurants.

New York's latest hotel achievement

LATZ OWNERSHIP—MANAGEMENT

Why the Northwest is the choice of the Brick Plant

Clay pit operators have found an answer to their digging problems in the Northwest. But greater than this—they have found relief from the annoying attentions necessary with steam machines. The Northwest brings even, steady power and constant operation without stops for taking water. It eliminates the hoseline and the troubles that it brings in freezing weather. It does away with the extra help required in handling coal, cuts operating costs and speeds up the work.

NORTHWEST ENGINEERING CO.
1224 Steger Bldg., Chicago, Ill.

NORTHWEST

GAS or CRANES·SHOVELS·DRAGLINES *ELECTRIC*

A Cure for One of the Worst of Dry Pan Troubles

Our Dry Pan Accelerator when placed in any make of dry pan will increase its capacity 25 to 40 per cent when wet or damp material is being used. When the material is dry the Accelerator will increase its capacity about 20 per cent.

The Accelerator is a simple but wonderfully efficient device, so working that it keeps the grates or screens clean and open, regardless of dampness of the material being used, and effectually prevents either dry or damp material from collecting on the outer surface of the grates next the rim. This coating beginning at the largest place of the screening surface reduces the capacity so much that by preventing this coating the Accelerator will often pay for itself in one day's run.

Full information: Description, price and terms furnished on application

Dry Pan Accelerator Company
Carthage, Illinois

WANT BELT FEEDERS TO PANS

Conveyor belts to feed the dry pans will be installed before very long at the plant of the Northern Refractories Co. at Ridgway, Pa. This equipment, it is hoped, will increase the capacity of the pans as well as reduce the amount of labor required.

NEW EQUIPMENT IMPROVES PLANT

The Kittanning Ceramics Co. of Butler, Pa., this summer installed a shovel, tractor and other equipment to increase efficiency of its pit. The company plans to build new kilns in the spring.

PLANS PURCHASE OF CLAY MACHINERY

Improvements and extensions to its plant which will result in greater capacity are being planned by the Corry (Pa.) Brick & Tile Co. This concern will install a new pug-mill and other clay machinery this winter.

BUILDING LARGE STOCK SHEDS

Stock sheds are being built at the plant of the Pittsburgh Clay Products Co. of Beaver Falls, Pa. These sheds will cover about 16,000 square feet and will facilitate the handling of stock material considerably.

PLANNING GREATER KILN CAPACITY

The Kittanning (Pa.) Buff & Gray Brick Co. will increase the kiln capacity of its plant this winter if present plans of the company are carried out.

EQUIPMENT SAVES LABOR AND TIME

The Westmoreland Brick Co. of New Brighton, Pa., is installing a new nine-foot dry pan and a crusher with automatic feeders. This equipment is so arranged that one man can weigh the clay, operate the crusher and attend to the pan as well, doing away with the labor of two men. This will effect a considerable saving in labor as well as expediting the preparation of the raw material.

WATSONTOWN TO BUILD ANOTHER KILN

A new kiln will be built this winter at the plant of the Watsontown (Pa.) Brick Co. The company is getting in readiness for an anticipated good year in 1924.

DALLAS INTERESTS TO BUY COLEMAN PLANT

Dallas parties are negotiating to buy the brick plant at Coleman, Tex., according to a report. The brick manufacturers' attention has been attracted by the splendid quality of shale at Coleman.

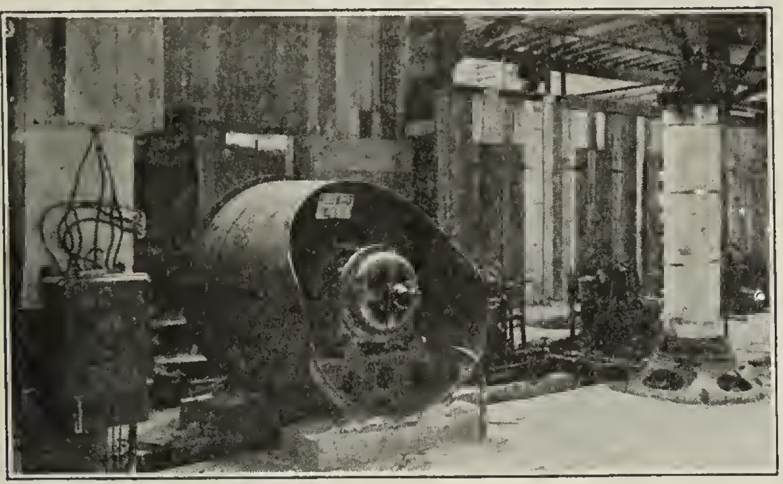
LEASES PLANT TO RICE INSTITUTE

The Rice Institute of Houston, Tex., has taken over the Conroe Brick Co. plant and has started work enlarging the plant and getting ready to manufacture brick. The institute has made an agreement to use the plant to manufacture several thousand brick for its own use. The Conroe Brick Co. will continue to own the plant and at the end of the Rice Institute contract will start up the plant and make brick for the market.

WILLETS CLAY CO. DESTROYED BY FIRE

According to a report the plant of the Willetts Clay Co., of Fairmont, W. Va., was totally destroyed by flames recently. The firemen were unable to gain control of the fire due to the lack of water. According to Captain Rollo J. Conley, secretary-treasurer of the company, the loss on building, equipment and stock will approximate $200,000. It is stated the property was well insured. The fire started in the engine or boiler room. Mr. Paul Willets' belief is that the plant will be rebuilt immediately, and further plans will be made on the return of President Harry Willetts from Pittsburgh.

Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

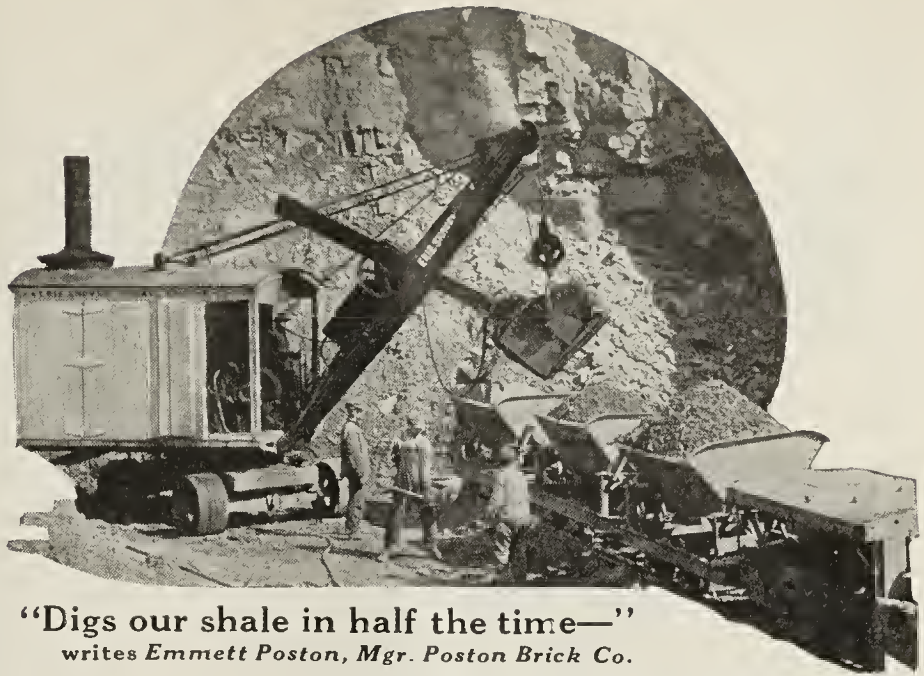
Ask for information regarding T-J System of Burning Oil.

Tate-Jones & Co. inc.

Furnace Engineers Established 1898

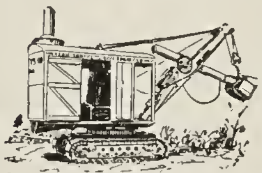
PITTSBURGH, PA.

New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis



"Digs our shale in half the time—"

writes *Emmett Poston, Mgr. Poston Brick Co.*



ERIE Shovels can be had with traction wheels, car wheels, or on the ERIE *lubricated* caterpillar type mounting. All interchangeable on the same truck frame.

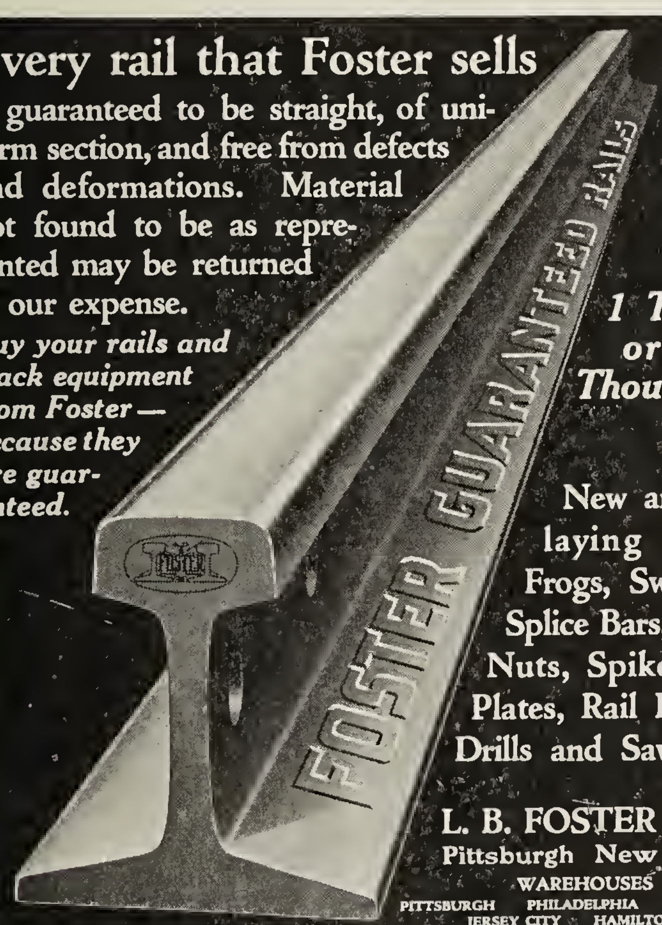
"With 5 men, the ERIE gives us plenty of shale to keep our plant running full capacity, and does a day's work of 11 men in 5 hours. And it has reduced our dynamite costs 90%. The ERIE has certainly proven a sound investment for tough shale digging."

Savings like these will increase your profits—and the ERIE'S steady reliability will assure you raw material whenever needed. The ERIE is built much stronger than other shovels of its size. Upkeep expense is negligible.

We would like to send you a bulletin full of facts and photos, showing just what the ERIE can do in getting out your clay and shale. Write for Bulletin B-16.

ERIE STEAM SHOVEL CO.
Formerly Ball Engine Co., Erie, Pa., U. S. A.
Builders of ERIE Shovels and Cranes

ERIE Revolving Shovels ERIE Steam Shovel Co.



Every rail that Foster sells is guaranteed to be straight, of uniform section, and free from defects and deformations. Material not found to be as represented may be returned at our expense.

Buy your rails and track equipment from Foster—because they are guaranteed.

1 Ton or a Thousand

New and Relaying Rails, Frogs, Switches, Splice Bars, Bolts, Nuts, Spikes, Tie Plates, Rail Braces, Drills and Saws.

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WAREHOUSES
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YOUR PHONE, WIRE OR MAIL INQUIRY GIVEN IMMEDIATE ATTENTION

L-B-FOSTER CO-
PITTSBURGH-PENNSYLVANIA

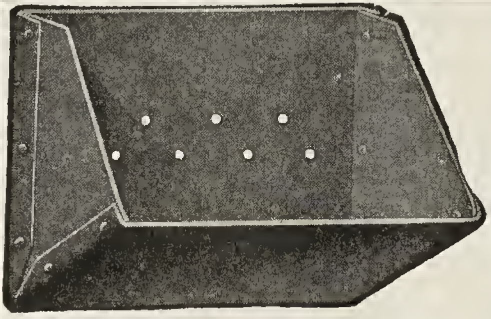


FIG. 133. Acute Heel Shelf Bucket, heavy duty, especially adapted for handling coal, stone, cement, ore, etc.

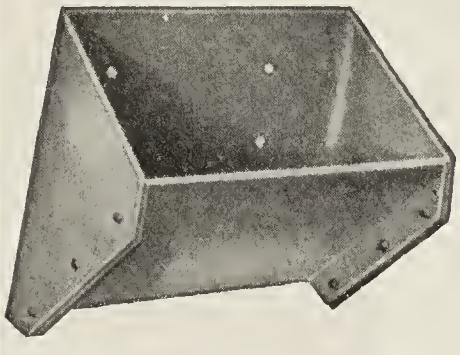


FIG. 1124. Trough Front, "Continuous Type" heavy duty steel bucket, used for variety of service conditions. Pours load instead of throwing it.

FIG. 668. "Salem." A heavy duty steel bucket; rounded contour throughout insures prompt, clean delivery; suitable for ores, coal, broken stone, etc.

SALEM
Genuine

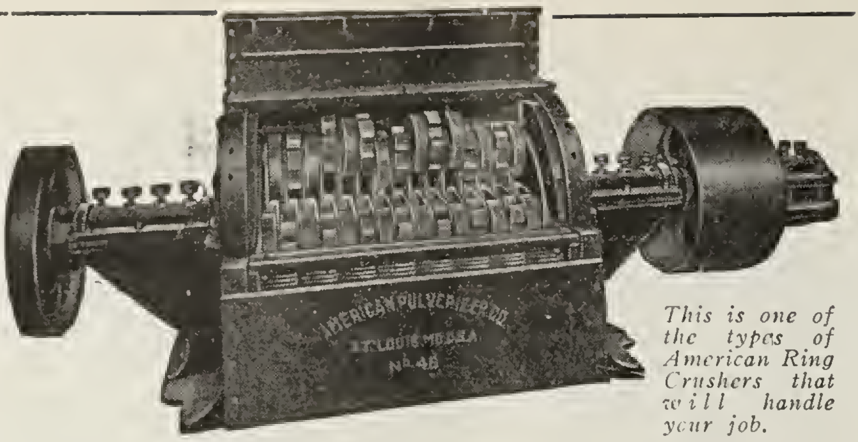
Elevator Buckets

Since 1880, when Salem Buckets were awarded First Premium for superiority, no other make of bucket has approached the Salem in quality, long wear and unusual service. It is made in many different sizes and gauges of steel ranging from 24 gauge to 6 gauge, and is adaptable for handling materials of practically any size, shape or weight.

Our ability to furnish special buckets made up in accordance with your specifications enables us to offer excellent service and prompt delivery.

Write for Catalog 3625

MULLINS BODY CORPORATION
Successor to
W. J. CLARK CO.
101 Mill St., Salem, Ohio


This is one of the types of American Ring Crushers that will handle your job.

Can You Use a Pulverizer that—

* * *

Handles shale as a unit, without extra breaker, from man size lump to a product passing 1/8 in. grate bar?

* * *

Pulverizes in quantities of 25 tons to 60 tons per hour, depending on dampness and size of raw products?

* * *

Operates at 600 R. P. M., thereby cutting down on the power operating expense?

* * *

Crushes with great rolling rings that use 65 per cent. of their entire weight before they need be replaced?

* * *

American Ring Pulverizers

are built to answer these needs of the brick and clay industry. Scores of installations give testament to their great efficiency and low operating expense. Every one is constructed to the job. Write your pulverizing problem to us and let us explain how the American Ring Pulverizer will solve it.

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American Pulverizer Co.

"We Crush Everything"

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Chicago 115 S. Dearborn St.
Cleveland 309 Plymouth Bldg.
Detroit 805 Hammond Bldg.
New Rochelle, N. Y. 92 Sickles Av.

WANTS BRICK MACHINERY

R. P. Johnson, a machinery dealer of Wytheville, Va., is in the market for machinery for a brick plant with a daily capacity of 25,000 brick, it is reported.

ONTARIO CLAY PRODUCTS PRODUCTION

PRODUCTION of brick and clay products in Ontario for the year 1921 and 1922 is as follows:

	1921		1922	
	Quantity	Value	Quantity	Value
Brick, Common..M	99,463	$1,743,094	105,536	$1,803,349
Brick, Pressed....M		....	44,892	900,111
	31,481	673,087	....	....
Brick, Rug ......M		....	22,453	514,666
Tile, Drain ......M	9,910	250,040	10,110	260,312
Tile, Building and Floor	......	211,529	....	562,566
Pottery	......	67,985	....	88,889
Sewer Pipe	......	939,464	....	973,824
Quartz and Silica Brick tons	12,957	74,635	81,168	149,302
Sand-lime Brick..M	......	456,700	....	770,597
Feldspar, tons	15,506	114,059	15,515	94,985
Total	......	4,530,592	....	6,118,501

From this table the following average prices per thousand brick are deduced—common $17.09; pressed, $20.05; rug (rough texture face brick) $22.98; hollow building tile, porous blocks, fireproofing and floor tile are worth $562,566. Floor tile are produced at Kingston and Mimico. Drain tile output was fairly well maintained but the demand is limited by the ability of the farmer to meet the expense of underdraining the land. The fact is noteworthy that the prices of farm produce have fallen to much lower levels than the commodities the farmer has to buy, with the result that purchases of drain tile and farm implements are curtailed.

Porcelain Industry Growing

The production of pottery given in the table was entirely of unglazed flower pots. There is a growing production of glazed pottery and firebrick but chiefly with imported clays. Porcelain manufacturing in Ontario is a growing industry, the chief product being electrical insulators.

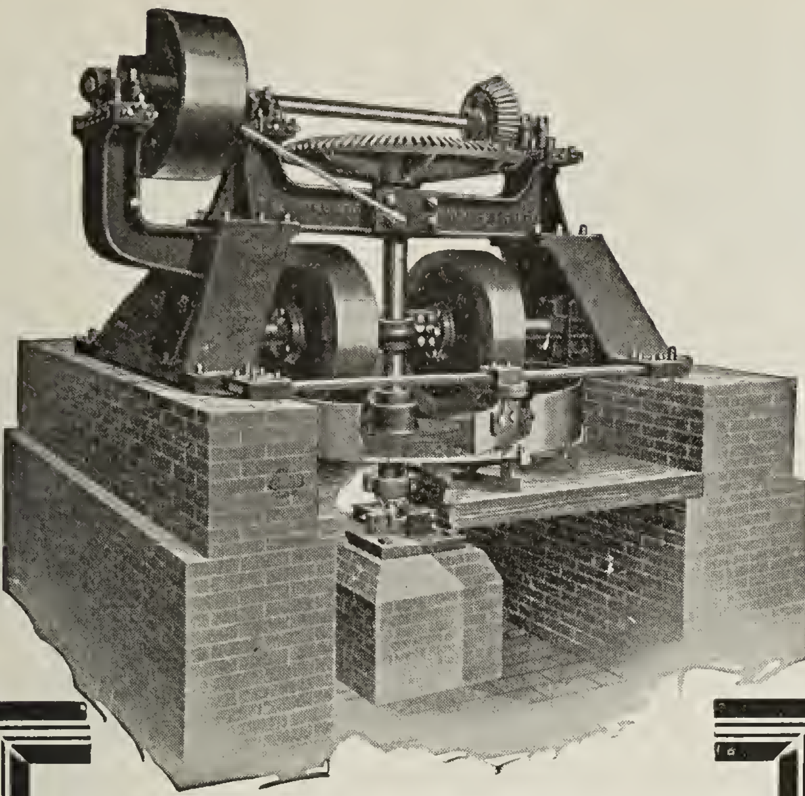
Sales of sewer pipe for 1922 exceeded those of 1921 and 1920. Only three plants operate in Ontario, at Hamilton, Mimico and Swansea. The special clay is found at Aldershot near Hamilton. Sewer pipe was valued at $23.44 per ton indicating sales of approximately 42,400 tons. Stock on hand at the end of the year was worth $227,493.

A marked increase in the output of sand-lime brick in 1922 was shown over 1921. The average price was $15.76 per thousand. The great bulk of sand-lime brick is made in or near Toronto. They are used largely for foundations, inside brick or as a base for stucco.

Silica Brick Production Increases

There was a large increase in the output of quartz and silica brick as compared with 1921, as a result of Electro-Metals, Ltd., of Welland operating its Killarney quartzite quarry. The bulk of the shipments by this company go to Welland for the manufacture of ferro-silicon. The Algoma Steel Corporation at Sault Ste. Marie manufactures its own silica brick from a quarry at Mile 19 on the Algoma Central Railway.

Prices of crude feldspar ranged from $6 to $8.14 per ton. During 1922 there were 2,413 tons ground at Toronto and Kingston, the value of the refined spar being about $18 per ton. The Frontenac Floor & Wall Tile Co., at Kingston, uses ground spar for the manufacture of floor tile and markets



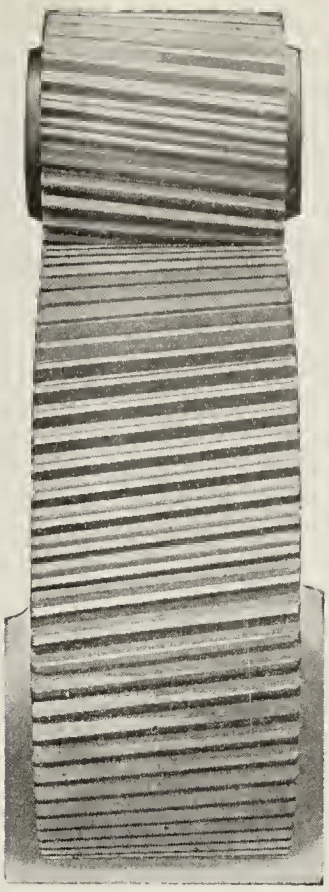
TORONTO DRY PANS

Accessibility of Wearing Parts—

When dry pans are mentioned, whether it be at a brick manufacturers' convention or some less formal gathering, some one is sure to say: "What I like about the Toronto Pan is its accessibility."

As the designers of Toronto pans have improved their product to keep pace with new ideas, they have always given just thought to accessibility of wearing parts. Screen plates, grinding plates, gear and pinion all removable with a minimum of effort.

The
TORONTO FOUNDRY AND MACHINE CO.
TORONTO, OHIO



Silent Helical Gears

IF you were to offer twenty times the price, ***nobody*** could make you better gears than Nuttall BP Helicals

Let us send you booklets going into details on the subject.

R.D.NUTTALL COMPANY
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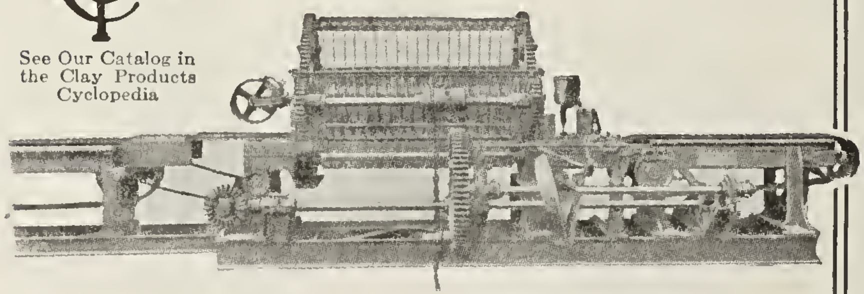
INSPECT THESE RECENT Installations of STEELE No. 18 CUTTERS

FALLSTON FIRE CLAY CO., Pittsburgh
PENNSYLVANIA CLAY CO., Pittsburgh
LANSDALE SHALE PRODUCTS CO., Lansdale, Pa.
VAN ORMER BRICK CO., Pitcairn, Pa.
WAYNE BRICK CO., Wayne, W. Va.
ADAMS PAYNE CO., Roanoke, Va.
STAUNTON BRICK CO., Staunton, Va.
SALISBURY BRICK CO., Salisbury, Md.
AMERICAN BRICK & TILE CO., Oklahoma City (Third cutter)
KNOXVILLE BRICK CO., Knoxville, Tenn.
CHEROKEE BRICK CO., Knoxville, Tenn.
HERTY TURP. CUP CO., Daisy, Tenn.
SALINA BRICK CO., Salina, Kansas
SAPULPA PRESS BRICK CO., Sapulpa, Okla.
ACME BRICK CO., Fort Worth, Tex. (4th cutter)
ALTON BRICK CO., Alton, Ill.
MEXICANA DE CUBAS DE ALBANAL, Mexico City, Mexico.
CITY BRICK CO., Los Angeles.
ASHTON FIRE BRICK CO., Ogden, Utah.
TERRE HAUTE VIT. BRICK WORKS, Terre Haute, Ind.
KENYON BRICK & TILE CO., Oklahoma City.
OWENSBORO (KY.) CLAY PRODUCTS CO.

and be convinced of their performance.

There are many others

See Our Catalog in the Clay Products Cyclopedia



J. C. STEELE & SONS
Statesville, North Carolina

Western Representative:
Geo. H. Smith, 3309 E. 37th Street, Kansas City, Missouri

Northern Agents:
The Manufacturers Equipment Co., Dayton, Ohio

its surplus product. Exports were consigned chiefly to United States pottery and enamel ware manufacturers and also to makers of pebble dash for stucco work. Shipments were chiefly from Eastern Ontario with one operator in the Parry Sound district.

WEST LAKE COMPANY REORGANIZING

The West Lake (Ont.) Brick & Product Co., Ltd., has engaged the services of J. G. Shepard of Peterborough, Ont., to take charge of the reorganizing of the company's business. A new plant will be built at Wellington and as soon as this building is completed, the equipment at West Lake will be removed to Wellington. The maximum capacity of the new plant will be 40,000 brick per day.

Machinery and Equipment

Devices and Methods, New and Old Concerning Which Information of Interest to the Clay Manufacturer Is Published

ONE MOTOR OR MORE—WHICH?

R. L. Gooding, Marion Steam Shovel Co.

The fundamental principles of all power shovels are just the same. Each involves three motions. The first is the advancing or crowding motion which brings the excavating tool into contact with the surface to be removed. Then the second motion lifts and loads the container. Both of these motions are in the vertical plane, as their ultimate object is to lift. After the material has been dug out, it must be swung around horizontally, to be piled up or to be loaded into the empty conveyors. Crowding, hoisting and swinging are to be found in every power shovel no matter of what type, but it is in the application of power in the creation of the necessary forces that designers have met with trouble. Shall there be one, two, three or four separate and distinct power units, and what shall propel them? That has long been a problem, one which is each year becoming more acute.

New Shovel with Advanced Type Operating Features

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men—in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Belt Conveyors and Belt Elevators	$5.00
Bricklaying in Modern Practice	1.20
Bricklaying System	4.00
Building Construction and Superintendence, Part. I. Masons' Work	7.00
Burning Clay Wares	7.50
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Rock Excavation, Handbook of	5.00
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Silo (The Hollow Tile) 100 copies	5.00
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We want to get in touch with a ceramic man that recognizes the *need* of measuring and recording temperatures, but feels that the market does not provide equipment that is satisfactory.

If You Qualify in accordance with the above specifications and will get in touch with us, we will make a study of your plant, and offer to make a trial installation and prove to you that Wilson-Maeulen Pyrometers will help you in assuring low operating costs and uniform high quality of output.

Remember Please there are no strings to this offer. Getting in touch with us costs you but the price of a letter; but if you qualify (better read the first paragraph again) and do not communicate with us, it may cost you much—it is costly—it is profit wrecking—to flounder in the Sea of Temperature.

WILSON-MAEULEN CO.
Makers of Rockwell Hardness Testers and Wilson Maeulen Recording Pyrometers
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NATURE SUPPLIES

the right materials to meet existing conditions. The sharp branches of the jungle do not scratch the skin of the tiger, nor do the cold winds of the North injure the polar bear.

Excessive repair expense and long delays do not arise when you apply the proper steel to your machinery parts. Advise us of the conditions under which the parts operate—having had more than 180 years' experience in the iron and steel industry we believe we can be of service in the solution of your problems.

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HIGH BRIDGE, N. J.

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Gentlemen:
Without obligation on my part, please mail me your booklet, "Putting the Right Steel on the Job".

Name..............................

Address..............................

The Marion Steam Shovel Co. four years ago developed a type of excavator known as the gasoline-electric. This type was built as a follower of the steam machine in principle, having a motor for each operation, crowding, hoisting and swinging.

The Marion gasoline-electric shovel equipment consists of a main gasoline engine driven generating set which maintains constant speed and power irrespective of the load on any or all parts of the operating mechanism. Current from this main set is supplied to the individual motors which control the three main motions of the machine.

By reason of the use of electrical transmission all power losses caused by the use of mechanical transmission are avoided and current is paid out to the main motions of the machine without any loss of energy. The motors, when completely over-loaded, slow up and finally stall in the same way as the steam engine on a steam shovel.

The power of the gasoline-electric shovel is rather better than the power of the equivalent size steam shovel; its speed and handiness are many per cent. greater. Its tractive possibilities are practically unlimited; it requires no certificated operator; it requires no fireman. It is controlled as easily as a street car; it consumes gasoline as fuel, which is easily transportable. It uses no more than one pailful of water per day, and this only to make up evaporation loss; there is no danger of freezing in cold weather for the radiator can be quickly and easily drained. All expense stops when the engine stops. It can be operated in inaccessible places where it would be impossible and impractical to attempt to take any other type machine.

The Marion company has built both the friction type and the three separate motor types and has abandoned the friction type because of the many costly and unnecessary evils attending. A very interesting booklet can be obtained on the construction and performance of the gasoline-electric shovel.

DEVISE BETTER BRICK TESTING MACHINE

An improved apparatus for the transverse testing of brick has been designed at the Bureau of Standards by H. L. Whittemore. During the past month 500 brick were tested to determine whether the apparatus was superior to that specified by the American Society for Testing Materials. In each apparatus 250 brick were tested. The brick were of three different kinds, 200 being clay, 200 cement and 100 sand-lime.

The average results were practically the same for both types of testing equipment, but with the Whittemore apparatus it was possible to test 100 brick in three hours, while 5¼ hours were required to test the same number with the A. S. T. M. fixtures. With the latter apparatus five pieces are displayed when the test brick is broken, and these must be accurately replaced in position for the next test. There are no displaced parts when a brick is broken in the new holder. Since both devices give equal results for the modulus of rupture of a brick, and since the A. S. T. M. fixture requires more time, the new apparatus evidently is an advance in the field of testing equipment.

CLAY INDUSTRY'S BUILDING SLOWS UP

There was a considerable decline during October in the number of construction projects announced by the brick and clay products industries of the southern states, only half a dozen such projects being carried out by various companies thruout the district as compared with a monthly average of twice that many for the first nine months of the year. This includes new plants established, and any new construction of importance carried out by existing plants in any of the southern states. A total of about 110 such projects were carried out the first ten months of the year—January to October inclusive.

More Important than the Plumb Line

WHAT the plumb line is to the brick *layer*, a Thwing Pyrometer is to the brick *burner*.

Imagine what a brick wall would look like if nobody kept constant check on the way the bricks were laid!

The *making* of bricks calls for even *more* exacting watchfulness. The burners must be on the job all the time. To aid burners—to make their work exactly right, hundreds of brick plants depend upon Thwing Pyrometers.

Thwing Pyrometers keep a constant check on temperatures at every stage of the burn, fostering as nothing else can, uniform production at lower cost and greater speed.

Write for information and evidence that a Thwing installation is an actual economy.

Thwing PYROMETERS

THWING INSTRUMENT COMPANY
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SCHAFFER

S E CO E

If An Architect Guessed —or Estimated

WHEN it came to figuring loads and designing structures, we'd live under very hazardous conditions and in slipshod homes.

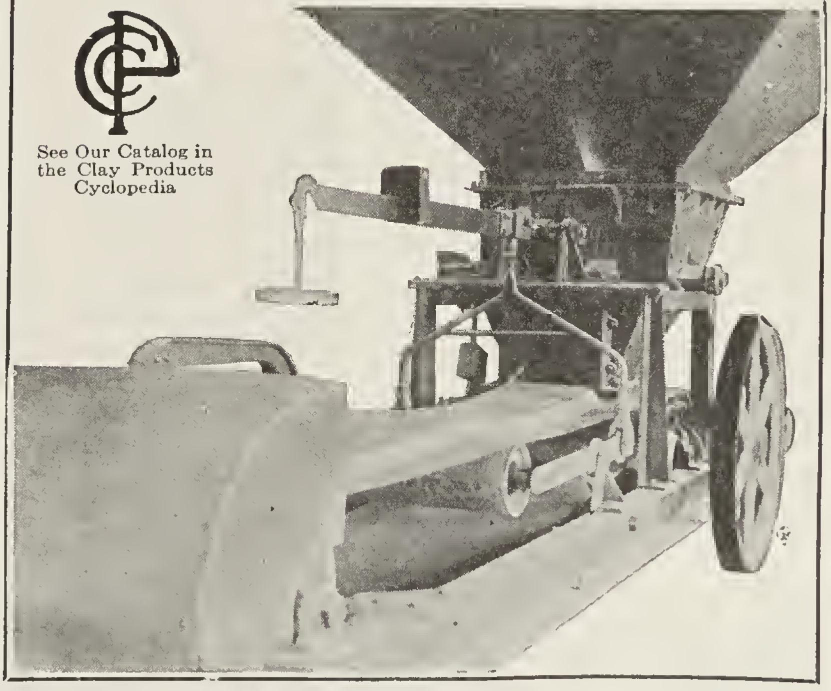
When you guess or estimate your clay mix, you run the chance of the mix's being too "short" or too "fat" and the drying and burning's claiming a huge loss.

Install the Poidometer. It feeds as it mixes, all automatically.

Write for details today

Schaffer Engineering & Equipment Company
2828 Smallman Street
PITTSBURGH, PA.

See Our Catalog in the Clay Products Cyclopedia



POIDOMETER

"Proctor"

DRYING MACHINERY

for

Electrical Porcelain,
Pottery, General Ware,
Saggers, Sanitary Ware,
Enameled Ware, Chemical
Stoneware, Face Brick,
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—and the experience of leading manufacturers of all these products proves that "Proctor" Dryers pay for themselves quickly and repeatedly, by speeding up production, reducing loss and cutting cost. When you decide to improve **your** drying facilities, our 40 years' dryer-engineering experience will guide you to the best and most economical equipment.

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INCORPORATED
PHILADELPHIA, PA.

Among Our Advertisers

Details Concerning New Models, Changes in Personel, News Matters, etc., That Our Advertisers Believe Will Interest Our Readers

The Westinghouse Electric & Manufacturing Co. are distributing a catalog describing their new model design underfeed stoker. For thirty-five years, they have been designing and manufacturing combustion equipment, and this experience, based on years of scientific research and practical development, has been the controlling factor in the design of the Westinghouse New Model Multiple Retort Underfeed Stoker.

This stoker has several distinctive features, one of these being the positive control of the contour of the fuel bed and another is the agitating element mounted across the lower end of the stoker, adjacent to the retort, which provides a means of maintaining minimum loss due to combustibles in the refuse.

The Stoker Department is located at South Philadelphia Works, Philadelphia, and a copy of this catalog will be sent on request to those interested.

⁂

The Stevenson Co., of Wellsville, Ohio, is preparing and will have in the mails very shortly a 48-page catalog devoted exclusively to showing the mountings, power drives, dimensions, layouts and other features of their full line of dry and wet pans. It is the intention to furnish in this book more information than has ever before been published about dry and wet pans.

This 48-page catalog will form one section of the complete catalog of all equipment which the Stevenson Co. also has in preparation.

Clay products manufacturers should be sure their name is on the list to receive one of these pan catalogs as soon as issued.

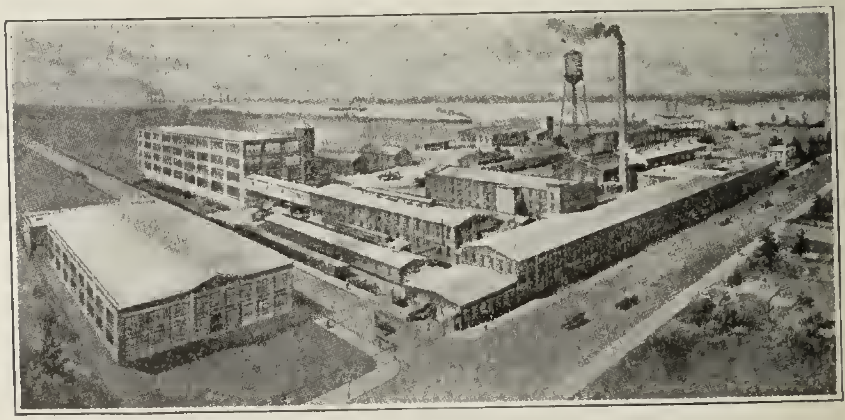
⁂

On or about January 1, 1924, the Quaker City Rubber Co. will move from their present location, 624-628 Market Street, Philadelphia, Pa., and all business of the company will be transacted at their factory, at Wissinoming, which is a suburb of Northeast Philadelphia.

To accommodate all of the various departments of the organization, large and commodious quarters have been provided on one floor. This will bring the main executive and factory departments in immediate touch with all matters and increased efficiency in every transaction of their business will result in the joining of the departments. Far better service than they have been able to give in the past will be reflected to their customers, it is anticipated.

Their factories are located on the Main Line of Pennsylvania Railroad, between Philadelphia and New York, with private siding, giving excellent facilities for freight shipment. The close proximity to both post office and express company enables them to quickly dispatch parcel post and express shipments.

Quaker City Rubber Co. promise to give ample notice of the exact date of their moving so that the necessary changes can be made in mailing records. They are looking forward to even increase business in the new location, which will be given their offices by the change. Remember that their address continues at 624 Market Street, Philadelphia, until January 1, 1924.



Factory of the Quaker City Rubber Co.

The Leading Clay Journal of the World

BRICK AND CLAY RECORD

Dedicated to Progress in the Clay Industry

A Forward Step

THE BURNING PROCESS in the manufacture of brick has been a most important one since the days of the first known brick makers. As early as 6,000 years ago the builders of the ancient city of Babylon burned their raw brick to a vitreous hardness in crude ovens. These ovens have given way to the modern kiln of today. The methods of science have converted the once crude process of brick burning into a complex and intricate procedure, in which mechanical devices of every description are used to save labor and promote efficiency. But in spite of the revolutionary changes in the methods of brick burning which have been brought about thru the utilization of machine aids in the process, kilns are still being fired by hand.

The defects of the hand firing method have been apparent, but until very recently a satisfactory remedy has not seemed available. Even tho mechanical means of stoking have been successfully used in power plants for years, no one had solved the more difficult problems of applying this principle to kiln firing. In the last few years, however, due to the pressure of rising costs of fuel and labor, a few manufacturers have turned their attention with increased interest to the possibilities of mechanical stokers for the firing of brick kilns. Attempts have been made with varying success to develop a stoker which would meet the needs of the industry, but before now reliable data of a comparable sort have not been available. In this issue of Brick and Clay Record we are glad to publish the first authentic results yet obtained from a direct comparison of hand stoking and machine stoking methods as applied to the operation of a modern brick kiln.

The data from the stoker test at the Laclede-Christy Clay Products Co.'s plant are extremely significant, particularly when we consider these facts: that the stoker used was one in which the grates were of only sufficient width for use with a terra cotta kiln; that no special effort had been made to adapt the stoker to the radically different construction of the brick kiln; and that the men who operated the stoker had no understanding of the particular necessities of brick firing. When, in the face of these handicaps, and the further complication that the kiln temperature was actually held at its maximum for 16 hours longer than required, the operators were able to obtain the excellent results which the test figures show, the achievement becomes a remarkable one, indeed. After only one preliminary test the machine stoker produced a ware equal in quality to the product of the highly-trained burners of the Laclede plant with the experience of 6,000 years of hand firing behind them—and this, too, with a good saving in fuel cost.

The test results justify the making of certain definite statements as to what may be expected from the application of the mechanical stoker in actual brick manufacture.

1. Such a stoker should materially reduce the labor cost of burning brick. Since the duties of the fireman will be chiefly supervisory, a smaller number of men will be required for the handling of a given number of kilns.

2. A sharp reduction in fuel cost should result, because of the fact that with the mechanical stoker a lower grade of coal can be burned in place of the more expensive grades of lump coal, with no sacrifice of efficiency. Furthermore, there should be a decrease in the actual amount of coal consumed.

3. The more regular rate of fuel combustion resulting from machine stoking will produce a strong even heat which can be controlled to a degree quite impossible under hand firing methods.

4. The installation of a mechanical stoker will greatly modify the intense heat and blinding glare to which the kiln fireman of today is subjected.

A Real Achievement

The mechanical stoker will reduce the cost of clay products manufacture by permitting a more efficient use of labor and of fuel. In terra cotta plants a saving of $200 per burn has been consistently obtained. At the same time the stoker will give the manufacturer a means of improving his product thru a more adequate control of the processes which take place inside the kiln. Finally, machine stoking will make the modern clay plant a more agreeable and healthful place in which to work. With the drudgery of hand firing removed the manufacturer will have solved one of his most vexing problems of labor turnover.

Brick and Clay Record recommends to every manufacturer of clay products a careful study of the possibilities of machine stoking as applied to his individual business. The mechanical stoker has come to stay and we fully believe that its adoption will prove to be one of the greatest forward steps that the clay industry has ever taken.

* * *

Are Apprentice Schools Impractical?

R. M. GILLESPIE, director of the Mason Contractors' Association, who addressed the A. F. B. A. convention last week made a number of statements, some of which were constructive while others should not go by unchallenged.

Mr. Gillespie states that mason contractors are not fully cognizant of the bricklayer apprentice situation, and that they do not realize that in most cases they are entitled to more apprentices than they now employ. He believes that every effort should be made to get the contractors to take on more apprentices, and to show these same contractors that the apprentice, far from being a liability, can be made to produce a profit.

All this is true, but we must take issue with the sweeping and positive manner in which Mr. Gillespie declares that apprentice or trade schools are not the solution of the apprentice problem. It may be true that the application of the principle of trade schools has in some instances been impractical, and that as a result bosses instead of workers have been created. But this should not condemn the apprentice school any more than the fact that brick plants have failed should condemn in general brick plants or their product.

An investigation in Philadelphia showed that 90 per cent. of the bricklayers who belonged to the union did not know how to read plans. They did not know one symbol from another. The apprentice trade schools, on the other hand, are aiding in making of genuinely intelligent bricklayers in Minneapolis, in New York City, in Evansville and elsewhere. This should answer the question as to the worth of the trade school more convincingly than any other argument.

Report on Stoker Fired Kiln Test

Here Are Presented the Actual Figures and Data Regarding a Test of the Gates Kiln Stoker Made in Direct Competition with Hand Firing Methods—The Facts Are Given with No Attempt at Embellishment—On the Opposite Page Is Printed a Discussion of the Test and Conclusions Arrived at from the Data Presented Here

The facts and figures relating to the stoker test, as well as the discussions and conclusions, as they appear on these pages, have been checked and approved as correct by Brick and Clay Record and the Laclede-Christy Clay Products Co.'s representatives, W. F. Godejohn, industrial engineer; Henry W. Perry, superintendent, and C. C. Lake, ceramist. Major E. Gates, who developed and marketed the stoker and supervised the test for his company, is also in accord with the views here given.

E. E. Ayars, formerly superintendent for the American Refractories Co. at Joliet, Ill., while he agrees essentially with the statements made here, is much more enthusiastic about the kiln stoker and believes that the results obtained were truly remarkable.

LAST SUMMER the Clay Service Corporation announced that a public demonstration of the Gates kiln stoker on a typical clay products plant would be made. This demonstration of the stoker's ability was to be observed by Brick and Clay Record and the results published in its pages.

After some deliberation the Laclede plant of the Laclede-Christy Clay Products Co. was picked as one upon which the stoker test could be successfully carried out. With this company's consent the test was carried out and the results obtained are here recounted and tabulated without comment or explanation.

Burn Hand Fired Kiln for Comparison

In order to have some basis of comparison it was thought best first to fire off a kiln, set with standard ware, under regular standard plant practice and to use the figures obtained from this burn in comparison with the results obtained on the same kiln, set with the same general type of ware and fired by the Gates kiln stoker. These comparative figures are here published.

In fairness to the manufacturer of this equipment as well as to the industry which may ultimately adopt it, the conclusions and opinions of those observing the demonstration should be read. These are printed on the opposite page.

The ware, both in amount as well as character was practically the same in each case and the figures here pre-

COMPARATIVE DATA OF SPECIAL HAND FIRED KILN vs. STOKER FIRED KILN

Hand Fired	WARE SET (Tons)	Stoker Fired
47.76 (sleeves)		(stoker tile) 25.664
26.637	Runner Brick	42.842
89.675	Standard Brick	96.596
164.072	Total	165.102
39.34	COAL CONSUMED (Tons)	41.53
.24	Coal Consumed Per Ton Ware (Tons)	.251
44.00	Regular Plant Average of Coal Consumed on Experiment Kiln	———
$171.13	Cost of Coal	141.82
4.35	Cost of Coal Per Ton	3.45
1.04	Cost of Coal Per Ton of Ware	$0.86
———	Saving	$29.31
	Per Cent. Saving in Cost of Coal Over Plant Average	26
5.95	Amount of Ash Left (Tons)	2.5
	BURNING TIME (Hours)	
45	Watersmoking	60
75	Dehydration and Oxidizing	91
120	Total	151
130	Regular Plant Average	———
	QUALITY OF WARE WAS EQUAL IN BOTH CASES	
	KILN DATA	
32	Diameter (feet)	32
10	Number of Fire Boxes	10
1,005	Area of Each Fire Box (Square Inches)	603

sented can therefore be used without reserve or qualification of any kind.

Probably the first thing to be considered in recounting the facts relative to the Gates stoker demonstration would be the burning curve. It will be noted that the stoker burn curve takes a sudden jump upward from 0 to 250 deg. in five hours and then during the next 20 hours gains only 100 deg. The stoker operators were held back by the head burner. The head burner's conservatism would not permit them to raise the heat more rapidly, fearing that damage would result to the ware. Water-smoking was not completed until after 60 hours and after a temperature of 920 deg. F. had been reached. After the water-smoking period no attempt was made when operating the stoker to follow the curve of the previous hand fired burn, but a new curve charted by the head burner from his experience was followed. This curve was followed up to about the 100th hour of the burn, when all restraint was let down and the stoker operators given instructions to increase the heat with all possible speed.

Misunderstanding in Firing

When the temperature which is sufficient to burn the type of ware set in the kiln had been reached, instructions were given to Major Gates by the head burner to produce a smoky condition and long flame which would carry the heat to the bottom of the kiln. These instructions were misunderstood and the flame kept out of the bottom and higher heat obtained in the crown. After approximately 16 hours of this kind of firing the stoker operators finally understood what was required and no more difficulty was encountered in finishing the kiln.

Altho the kiln was under fire for 31 hours longer during the stoker burn, only 2.19 tons more coal were required to finish the kiln. The coal used in regular hand firing is a run of mine coal from Southern Illinois, whereas the stoker used washed screenings which were 90c per ton cheaper.

Cleaning Simpler with Stoker

No regular cleaning schedule was followed with the stoker but it was apparent that the construction of the grate in the stoker equipment made the cleaning of the fires a much simpler operation than with grates used in the regular hand fired practice.

The kiln used was the round down-draft open bottom type, 32 feet in diameter. It was equipped with ten fire boxes. The bag wall was of the continuous type. The grate in use on the kilns during the hand fired burn measured 30 inches wide by 33½ inches deep, while the stoker grate measured but 18 inches by 33½.

When analyzing the results of these two demonstration burns the facts above recounted must be borne in mind. Under average plant practice, under the conditions encountered during the demonstration burns, the time required is 130 hours and the average coal consumption approximately 44 tons. This compares with 120 hours during the hand fired demonstration and a consumption of 39.34 tons of coal. The stoker burn covered a period of 151 hours and consumed 41.53 tons of coal.

Tests Show Kiln Stoker Principle to Be Correct

(Discussion of and Conclusions Drawn from Facts Presented on Opposite Page)

IT HAPPENS VERY OFTEN in testing equipment or materials that the cold figures do not tell the complete and accurate story but that the facts, before being valuable and worth while, must be explained. This is the case in the Gates stoker demonstration held at the plant of the Laclede-Christy Clay Products Co. recently, and the results of which are published on the opposite page.

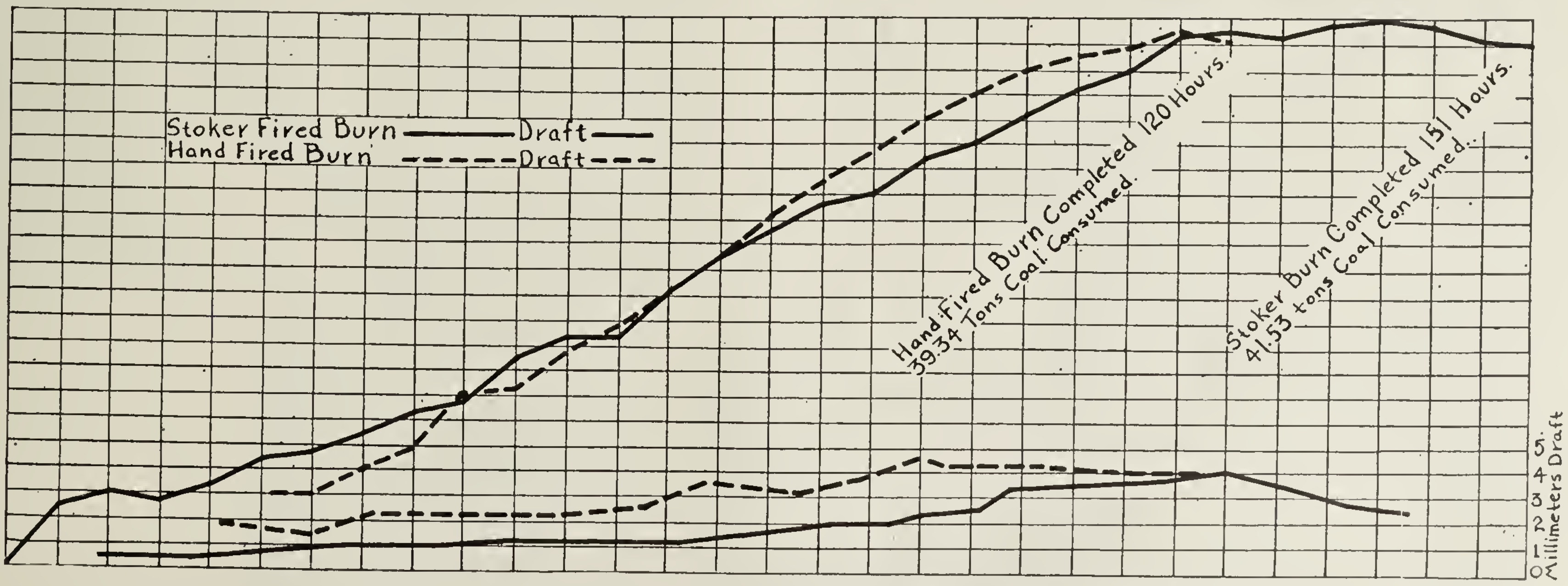
Comparison Between Two Burns

In considering the two burns which were made for comparison, the hand fired and stoker fired, these facts stand out:

1. The stoker required 31 hours longer to burn approximately the same tonnage of ware than hand firing did. (The reasons for the increase in burning time are contained in this report.)
2. It consumed little or no more coal than did the hand firing process, despite the fact that the kiln was under fire longer.
3. A cheaper coal was used in the stoker than with hand firing, effecting a considerable saving in fuel cost.
4. The quality of the ware drawn from the kiln was on a par with that of the hand fire burn.

No More Labor Required

Owing to the methods employed in firing the stoker it was impossible to obtain any accurate data to arrive at a figure on the amount of labor required to fire the kiln with stokers. In terra cotta plants, where these stokers have been in successful use for two years, it requires but one man to fire two kilns. Whether or not this ratio would hold good on a fire brick plant



Time-Temperature and Draft for Stoker Burn and Hand Fired Burn Here Charted. Text Explains These Curves Fully

Two Views of the Test Kiln Showing It Before and After Being Equipped With Stokers. It Will Be Seen That the Changes Necessary Were Very Slight

cannot be said. It is safe to assume that the labor would not be *more* than with hand firing.

Reviewing the four points enumerated it can be seen that in only one instance is the count against the stoker and in favor of hand firing. That is in the time required to burn the kiln. Before forming a definite opinion on this point, however, it is necessary to take a few things into consideration. In the first place, there were two elements to be considered in this stoker test. One was the head burner of the Laclede-Christy Clay Products Co., who knew everything about burning fire brick and nothing about operating the Gates stoker; the other was Major Gates and his assistants, who knew everything about handling a stoker but nothing about burning fire brick or firing an open-fired kiln. It is apparent, therefore, that the two did not speak the same language, had no common ground on which to stand.

Burn Prolonged Due to Misunderstanding

Offhand, this might seem like a little thing, but as a matter of fact it was the direct cause of prolonging the burn. To understand this it is but necessary to study the burning curve in connection with this explanation. It is well to mention here, parenthetically, that the temperatures given were obtained in the top of the kiln, the pyrometer being located in the crown.

When the required temperature had been reached the burner tried to explain to Gates that he wished more heat to bring the bottom up to the necessary temperature. The burners idea was misunderstood, however, and it was thought that the required temperature had not as yet been reached and that it was necessary to go still higher. Therefore the men firing the stoker were given to understand that the flame was to be kept out of the bottom and a higher temperature reached. What the head burner really wanted, however, was a smoky fire which would carry the heat to the bottom even tho this meant a sacrifice of heat in the top.

The time-temperature curves of the two burns clearly shows how much longer the high heat was maintained because of the misunderstanding during the stoker fired burn. When once it was understood what was required of the stoker to finish the kiln, there was absolutely no difficulty encountered in producing a long flame which went thru the entire bottom of the kiln. Had Major Gates known as well as the burner what was required to bring the heat into the bottom, the stoker could have been operated in such a way that the bottom could have been completed in shorter time.

Will at Least Equal Hand Firing

Taking the above facts into consideration, it is reasonable to assume that after the burning with the stoker becomes standardized, there will be no difficulty in at least equalling the present regular plant average of 130 hours with hand firing methods.

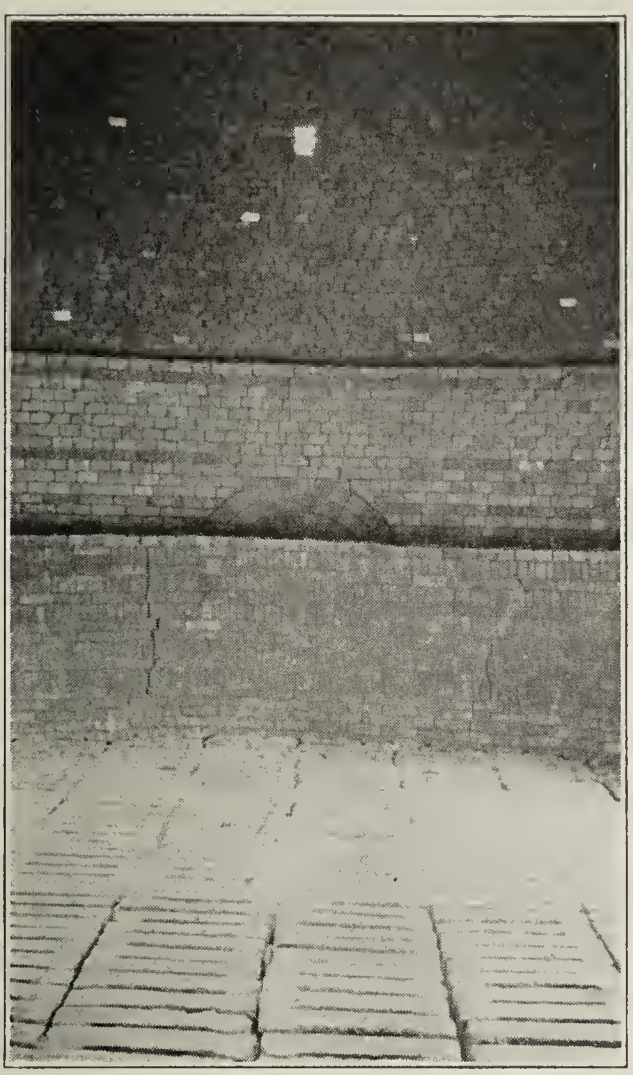
At Left Angelo, Head Burner at Laclede-Christy's Laclede Plant, Is Looking Into the Kiln to See If the "Bottom" Is Hot

Right E. E. Ayars, One of Brick and Clay Record's Representatives, Taking a Draft Gage Reading

This is also the opinion of the men of the Laclede-Christy Clay Products Co., who observed the test.

Several other things should also be brought out here because the figures do not show them.

Every fireman knows that a good draft is essential to raise heat and that without a good draft the water-smoking period is lengthened considerably. The chart shows how much better readings the draft gage gave during the hand fire burn. This poor draft was in no way the fault of the stoker. After 90 hours' firing with the stoker the draft gage showed but 2¼ millimeters, as against a normal of 4½. As a result it was necessary to run the stoker at a much slower rate of speed than it could have been run.



View of Interior of Kiln. Note Continuous Bag Wall

Good Draft During Hand Fired Burn

In the hand fired burn, the draft, as stated, was quite good from the beginning, which was probably due to the fact that the stack was hot when the kiln was lighted. This stack is connected to Kiln 5 (the test kiln) and Kiln 4 and it so happened that Kiln 4 was cooling when the fires were lighted in Kiln 5.

An item of considerable interest to superintendents in considering the operation of the stokers is the tendency of the fires to form clinkers and the ease with which these clinkers can be removed. Inasmuch as the clinker is caused by the noncombustible material in the coal it is not reasonable to assume that there is less clinker formed in a stoker fired grate than in a hand fired grate. But there is a noticeable difference in the ease with which the fires can be cleaned. The stoker makes possible the use of grates so constructed that an enormous leverage can be obtained on the slice bar and as a result the clinker is removed very easily. It is not necessary to clean fires with the stoker any oftener than with the hand fired method.

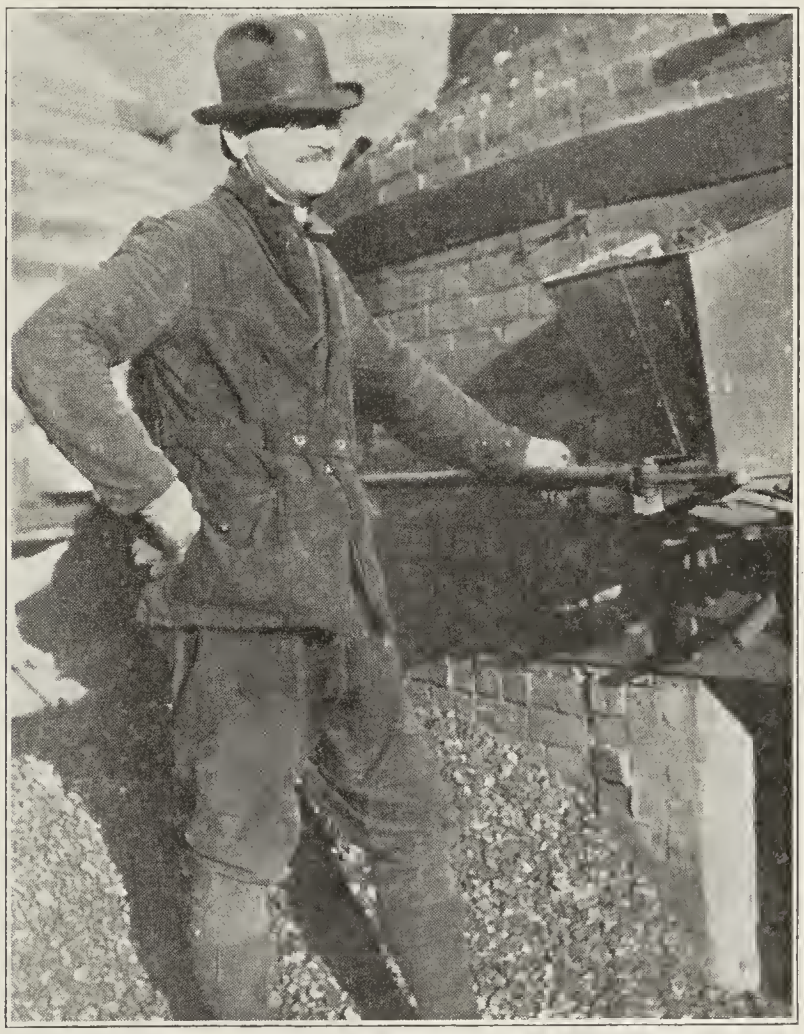
Gates Stoker CAN Burn Brick

While all this data and information is interesting and essential in forming a fair opinion of the Gates kiln stoker, the most important angle in the demonstration of this equipment is the fact that a mechanical stoker can burn brick in an open fire kiln with a lower grade of coal and with little or no increase in coal consumption. There can be no question in the mind of anyone that the stoker principle is right and will be an improvement over the hand fired method. On this point Laclede-Christy's representatives, W. F. Godejohn, industrial engineer; H. W. Perry, superintendent, and C. C. Lake, ceramist, and also Brick and Clay Record's representatives, E. E. Ayars, formerly superintendent for the American Refractories Co., and Herbert V. Kaeppel, are agreed.

It was only the second time that the stoker had ever been tried to fire an open fire kiln, the first time being immediately before the second on the same kiln. This burn was carried out, however, under conditions which made the data obtained of little value as a guide for firing the kiln for a demonstration. An extremely dirty slack coal, which had been lying in the yard anywhere from six months to a year, was used. Naturally this coal was of an extremely low efficiency and it was difficult to make any heat with it.

Need Larger Grates

Valuable information about stoker firing on open-fired kilns was obtained during the course of the test burn and this data will be applied on future burns. For instance, it was found that the 18 inch grate, which is ample for firing terra cotta kilns, was of insufficient size in firing an open-fire kiln of the type used for demonstration at Laclede-Christy's plant. In all probability a 24 inch grate will be installed, and with this larger equipment Major Gates believes he will be able to make better records. The performance with the 18 inch grate is little short of remarkable, when it is realized that with hand firing the grates are 30 inches, or two-thirds larger.



Major E. Gates, Inventor of the Gates Kiln Stoker. Evidently He Is Happy About Something. Note the Type of Coal Used

E. E. Ayars' Opinion

The opinions of those who were present during the demonstration burn will probably be of interest to the industry. E. E. Ayars, formerly superintendent for the American Refractories Co., gives his opinion of the stoker as follows:

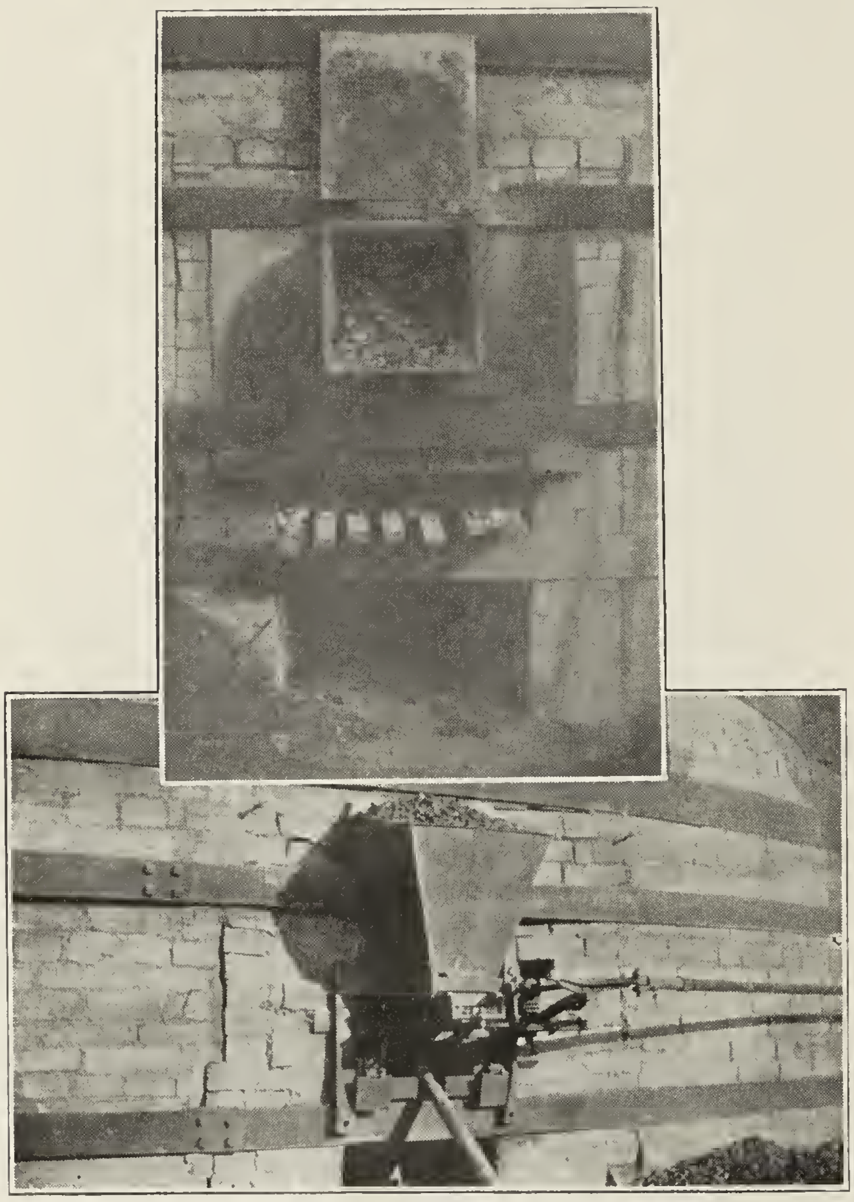
"It has been demonstrated by these two burns that with a stoker designed for a different type of kiln it is possible to get good quality ware with about the same fuel consumption as with hand practice. More uniform results should be obtained by the operation of this stoker than could be expected with hand firing. By increasing the size of the grate it should easily be possible to effect a fuel saving and time saving and produce, on average operation, more uniform ware. The labor saving possibilities and the approach to scientific control are significant.

"Two tests have been made with the stoker, while the hand practice is a development of years of accumulated knowledge and experience. The stoker wins in the face of this fact. A few more burns with present equipment and it would outstrip for time and fuel the best hand firing without changing the grate or feed slide."

Laclede-Christy Endorses Stoker

W. F. Godejohn, industrial engineer of the Laclede-Christy Clay Products Co., says:

"From the two burns which have now been completed with the Gates kiln stoker it is apparent that this equipment has possibilities. I have no doubt that after the experience of some five or six burns the stoker could better hand firing results. The stoker principle is right and will be a big improvement over the old hand firing methods."



Top View Shows Typical Fire Box on Laclede-Christy Plant. Grate Size Is 30x33½ Inches
Below Is a Fine Close-up of the Gates Stoker Fire Box. Width of This Grate Was Only 18 Inches

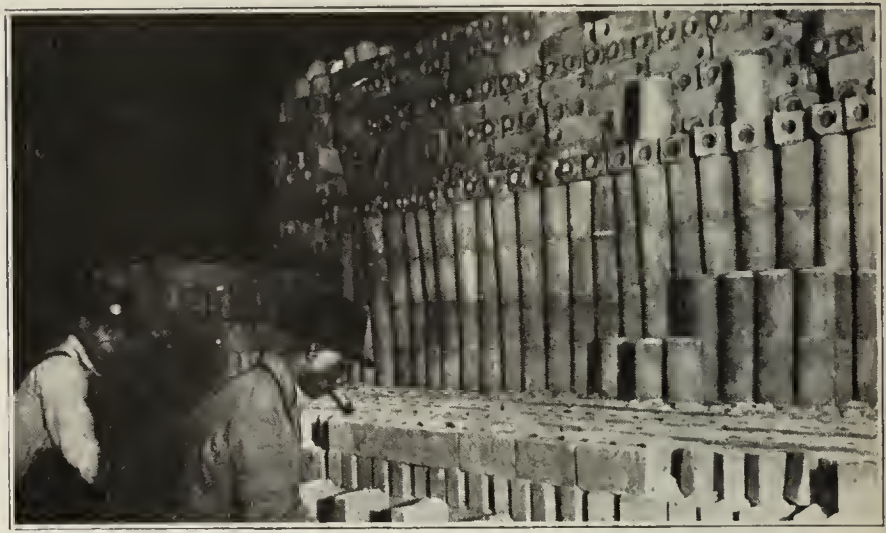
Henry W. Perry, superintendent of the Laclede plant of the Laclede-Christy Clay Products Co., says:

"In my opinion the Gates stoker is a decided departure from the old style fire box. After viewing the two tests it is apparent that, with a larger grate, it will be a great improvement for burning brick and tile in an open fired kiln.

"Something will have to be developed, however, to take care of sewer pipe burning, especially in the salting of kilns. A certain human element enters in favor of the stoker, which is a saving of firemen's vitality during the hot summer days. They will be protected from the open glares of the fire during the clinkering periods."

C. C. Lake, ceramist at the Laclede plant also endorses the stoker in these words:

"The results of the tests of the Gates kiln stoker, demonstrate only in a mediocre way, the adaptibility of the stoker for burning brick in an open-fired kiln. There is no doubt that subsequent burns will improve this test. The stoker is a big step forward, even in the most modern methods of burning kilns with coal."



How the Ware Was Set in the Kiln. Sleeves on Top of Standard Brick and Runner Brick in the Crown

Experiments with the Gates kiln stoker will be continued at the Laclede-Christy Clay Products Co.'s plant. A larger grate than the one now in use will be installed and several burns made.

Laclede-Christy will also equip a sewer pipe kiln and experiments on sewer pipe burning will be made.

Results of these burns will be published by Brick and Clay Record.

MAKES FIRE BRICK ABSOLUTELY UNIFORM IN SIZE

Making fire brick absolutely uniform in size to insure a minimum thickness of joints is the latest achievement in refractories manufacturing. These brick are made by a new process developed by the General Refractories Co., of Philadelphia at its Olive Hill, Ky., plant. Besides uniformity and size it is claimed for the new product that it will run uniform in quality also. As every refractories manufacturer and user knows, the joint in a fire brick wall is always its weakest part and for that reason any refractory which permits of a thinner joint is a distinct improvement.

Proper regulation to insure a uniformity in the mixture, grind and density of the raw material so that uniform results can be obtained in the kiln, are the main features in the new process.

When a panel of the brick made by the new process was laid up alongside of a similar panel laid up of ordinary fire brick, the difference in the size of the joints was very marked. The bricks are so exactly the same size that it is possible to lay up a panel without mortar between the joints and to place a straight edge alongside of each end. Each row of brick will be exactly the same length as the previous row. Several panels of three inch thick brick, six high, were laid up and showed a total variation of less than one-sixteenth inch or less than an average of one-ninety-sixth inch for each brick.

The General Refractories Co. has been working on this new process for a number of years and is now ready to put brick made by it on the market.

French Lick Springs Hotel at French Lick, Ind. A Fine View of the Beautiful Grounds Surrounding the Hotel

A. F. B. A. Pins Faith on Advertising

Expect 1924 to Exceed 1923 Face Brick Business —O. K. Dealer-Manufacturer Contract Form— Advertising Campaign Regarded a Huge Success

A YEAR which topped all others in amount of business done was very fittingly celebrated at the annual conventions of the American Face Brick Association and the Face Brick Dealers' Association, held at the French Lick Springs Hotel, French Lick, Ind., on December 4, 5 and 6. Business and pleasure —plenty of each—were dished out to the face brick men during their stay in the famous summer resort. New faces were everywhere in evidence, and while mentioning this subject it is fitting to point out that among those present was P. E. Peterson, of the Los Angeles (Cal.) Pressed Brick Co.

300 manufacturers and dealers were present. This attendance ranks high in the annals of face brick conventions. It is an indication of the enthusiasm of those interested in face brick as to prospects for next year. Many new dealer and manufacturer connections were made.

Publicity Responsible for Increased Face Brick Use

Important among the association activities is the promotional campaign for face brick which, after four years of consistent effort, has proven to be the greatest and best undertaking ever attempted by the A. F. B. A. Figures show a tremendous increase in the production of face brick in recent years, and this increase is attributed to the publicity campaign.

Only three sessions were held this year—one each day. The motion picture film, "The Great Idea," which was exhibited one evening, was very favorably received. This film advocated home ownership, and its story was woven around the building of a solid brick house. The film is, of course, promotional but is presented in a manner which will hold the observer's interest.

B. W. Ballou of the Kansas Buff Brick & Mfg. Co., Kansas City, Mo., who has been a member since the inception of the A. F. B. A., was elected president to succeed James M. Adams, Ironclay Brick Co., Columbus, Ohio. Howard Frost of the Los Angeles (Cal.) Pressed Brick Co.; Wm. L. Hanley, Jr., of the Bradford (Pa.) Brick & Tile Co., and E. F. Plumb of the Streator (Ill.) Brick Co. were added to the board of directors.

An excellent picture of the present status of the face brick industry was presented in a very comprehensive manner to the delegates by the association's president, J. M. Adams. It is unfortunate that space does not permit the publication of Mr. Adams' address in full, but Brick and Clay Record has published in another part of this issue a large part of his address, which everyone should read.

Secretary R. D. T. Hollowell, who followed Mr. Adams on the program, covered the association activities very completely in his report. Speaking generally, he said: "Operating conditions have been excellent; there has been sufficient labor and an ample supply of fuel; in the face of the greatest volume of freight traffic the country has ever seen, the supply of cars to our industry has been practically 100 per cent.; freight movement has been reasonably prompt; to top all this, the demand for face brick in 1923 has exceeded that of any previous year.

Two Years of Good Conditions

"We have now had nearly two years of extraordinarily good conditions. Our industry is becoming firmly established. Our people are today making the finest ware our ancient industry has ever produced and, with the growing appreciation of the consuming public, those manufacturers who are equipped, physically and mentally, to keep pace with the fast moving procession, can look forward to the future with much confidence."

Mr. Hollowell said that there was tangible evidence of the growing appreciation, on the part of the membership, of the division meetings. The average attendance in 1923 was way above that of any previous year. Many valuable papers were contributed at these meetings and constructive discussions held. Special attention was called to the recent dinner to the New Orleans architects tendered by the Southern Division. That meeting stands out as the high light of division activities during the year.

A number of plants, both member and non-member, have taken advantage of the availability of the revised cost and accounting manuals prepared for the A. F. B. A. by either making a complete installation based on the practice recommended or by harmonizing existing cost systems with fundamentals advocated.

A new feature introduced this year was the distribution of "Trends in the Face Brick Industry," made up of index numbers, from which percentage increases or decreases are quickly apparent.

Want More Bricklayers

For several years there has been a growing realization that the potential market for face brick was limited by the number of mechanics to lay this material. The board of directors of the American Face Brick Association has discussed this matter fully and as a result a committee was appointed to take action. Money was appropriated and R. M. Gillespie, member of the executive board of the Mason Contractors' Association of the United States and Canada, was secured for a period of six months to aid in solving the problem of securing more bricklayers.

Hollowell Praises Hoover's Department

Mr. Hollowell gave special tribute to the Department of Commerce because of the splendid and full cooperation which that branch of the Government has given to all business.

As a final thought Mr. Hollowell pointed to the success of the face brick promotional campaign. Because new face brick plants have been built, old plants remodeled and plants manufacturing other clay products equipped to make face brick, Mr. Hollowell pointed out the necessity for creating a demand sufficient to take care of all of this production. If the American Face Brick Association Service Department had at its disposal an additional sum of $75,000 to $100,000 per annum for display advertising in great popular magazines in addition to and on top of the media which are now being used, Mr. Hollowell felt that the association would get "face brick consciousness" so deeply instilled into the minds of everyone that, when thinking in terms of construction, the mind of the man on the street would subconsciously turn to brick.

B. W. BALLOU

"At least 40 per cent. of the present face brick production in this country is contributing neither ideas nor financial support to the efforts of the A. F. B. A. to increase the use of face brick. If everyone would get into the band wagon and pay his share," Mr. Hollowell stated, "there is no question but that the huge demand for face brick in 1923 could be doubled by the year 1927."

Dr. G. C. Mars, director of the Service Department of the American Face Brick Association, touched briefly on the work that had been done in his department and the great success with which the Face Brick Association promotional campaign has met. He urged consideration of a larger assessment or greater membership, which would permit the A. F. B. A. to complete a more rounded out program of publicity.

F. W. Butterworth, chairman of the Committee on Research, stated that the report on the cooperative research conducted by the four national associations was not ready. Future work is being planned and at the present time the Bureau of Mines is about to conduct an investigation into the subject of removing pebbles from clays and the treatment of impure clays to prepare them for manufacture. The Bureau of Standards will also make an investigation into the drying properties of clay and it is fully expected that by next meeting some excellent data will be available for the manufacturers.

Says 150 Different Sizes Made

Paul B. Belden, chairman of the Committee on Standard Sizes, stated that many face brick manufacturers did not support the standard size adopted. Investigation showed that 150 different sizes of face brick were being produced. This has discouraged many architects from working with brick because of the difficulty in designing structures. Mr. Belden urged those manufacturers who have not as yet replied to the Government questionnaire recently distributed, to make a report immediately, stating the size of their brick.

J. W. Bogue, chairman on the Committee on Bricklayer Apprentices, reported that his committee was appointed in July and that it had secured the services of R. M. Gillespie, of the Mason Contractors' Association, for a period of six months. Mr. Gillespie has visited and will visit many towns in an endeavor to encourage the use of more apprentices by mason contractors.

Approve Mellon Tax Plan

Eben Rogers, representative for the American Face Brick Association on the United States Chamber of Commerce, reported on the work that the National Chamber was doing. At this point A. B. Adams, of the Key James Brick Co., introduced a resolution approving Secretary of the Treasury Mellon's tax reduction proposal. This resolution was passed by the membership.

B. W. Ballou reported on the study of an ideal contract form between manufacturers and dealers, which was prepared by a cooperative committee of both manufacturer and dealer organizations. This contract form, which will be published in a later issue of Brick and Clay Record, was approved with a single amendment.

Of great interest to the members present was the outline of present and future objectives and activities of the American Face Brick Association, which was presented by Secretary R. D. T. Hollowell. Among the activities mentioned were booklets on Italian brickwork, English brickwork, industrial housing and factory building, to be prepared by the Service Department.

Plan Much Work for Coming Year

It was recommended that the association appoint a committee to work on the foreign brick problem.

It was suggested that efforts be made to purchase chemicals thru a cooperative purchasing committee.

It was advocated that a file of all the products made by members of the association be kept in the association offices.

A manual of office practice—methods of recording orders, filing them, and a full description of filing systems was recommended to be prepared.

A credit service, whereby the names of all delinquent dealers would be available, was mentioned.

At this same session a resolution was passed favoring the working in cooperation with the Common Brick Manufacturers' Association on the foreign brick problem.

Speaks on Apprentice Question

The last session of the convention was devoted to three addresses. R. M. Gillespie, member of the executive board, Mason Contractors' Association of the United States and Canada, addressed the association on the bricklayer problem. He pointed out that the greatest difficulty in the bricklayer apprentice situation is the fact that the mason contractors are not taking on the number of apprentices that they should. Mr. Gillespie was of the opinion that the solution to the bricklayer problem would not be found in the establishing of apprentice schools all over the country, but rather by getting in touch with the contractors and urging them to take on their full quota of apprentices. The common impression, that the international union restricts the number of apprentices, is not true. Moreover, the general impression that an apprentice is a burden on the contractor is not true. Mr. Gillespie said that he could easily prove his statement that an apprentice is really a saving to the contractor. Mr. Gillespie further stated that it was possible in many cases for brick manufacurers themselves to develop apprentices in their plants.

A. F. B. A. "Ads" All True, Says Grilk

A very enlightening talk was given by Louis Grilk, western manager of the George L. Dyer Co., the advertising agency which handles the publicity account for the A. F. B. A. The subject was, "After Four Years—Where Are We?" Mr. Grilk pointed out that the American Face Brick Association's advertising program was the most consistent of all the clay products association advertising campaigns in recent years. The continuity of effort in advertising was the reason for the great success ascribed to the campaign. He pointed out that the face brick plans distributed by the association are considered the best of any association house plans.

Mr. Grilk pointed out that while the A. F. B. A. campaign might have been more sensational in many respects, it was the effort of those in charge of the campaign to stick to the truth in all copy and as a result no face brick manufacturer has ever had to make an apology for association advertising.

Of particular interest were the charts which compared the production of face brick with the production of other products, such as paving brick, common brick, hollow tile, architectural terra cotta, lumber and Portland cement. Face brick production has outstripped all other clay products and since 1913 has even shown a greater proportionate gain than Portland cement.

Trend in Face Brick Construction

Efforts were made to secure an idea as to the trend in face brick home construction. In one suburb of Chicago the present proportion of face brick homes is 33.4 per cent., as compared to 9.7 per cent. in the five years preceding 1919. In another town the percentage of brick homes has increased from 22.9 to 33.9 per cent. The trend seems to point to a face brick consumption which is increasing much more rapidly than other clay products and faster even than lumber and cement. Mr. Grilk was of the opinion that the publicity campaign should be increased so that it may be rounded out still further.

The last speaker of the convention was Magnus W. Alexander, managing director, National Industrial Conference Board, New York City. Mr. Alexander held his audience at an extraordinarily high pitch of interest because he was touching on vital, every day problems which concerned everyone. He referred to many charts, which helped him to drive home his points. Among the many interesting and significant things he stated was this one—that the wage earner can now buy 40 per cent. more in household commodities than he could in 1913. He pointed out that wages measured by money or coin meant little but that measured in purchasing power meant much.

Wants Immigration Restrictions Kept

Mr. Alexander called attention to the conference to be held on immigration on December 13 and 14 and stated that if he were to venture a guess the results of this conference will be the recommendation that the present immigration ratio be reenacted and that a committee be appointed by Congress further to study this subject.

Mr. Alexander spent considerable time discussing taxation. He stated that the tax burden in 1913 was six per cent. of the national income. In 1921 it was 17 per cent., and in 1922, 12 per cent. This condition, he pointed out, was a serious one and should be remedied. One point in this connection that is not generally known was the fact that local and state taxes have increased at even a greater rate than national government taxation, and that this has restricted expansion and foreign trade, in that it consumed capital that would otherwise be available for such purposes. Mr. Alexander pointed out that one-fifth of the total national wealth in 1921 was tax exempt property. He also stated that the cost for maintaing public employes is $34 per capita. One out of every 12 men or women over 16 years of age feeds at the public trough.

Establish Surplus

In discussing future business conditions Mr. Alexander was of the opinion that now was the time for manufacturers to curtail plant expansions and to establish a surplus instead of declaring dividends—a surplus that would tide them over a period of recession, which he anticipates will come in the near future and before another period of prosperity is due. He stated that, although he was bullish on the United States over a period of five or ten years, at the present time he believed that every business man should be cautious.

Face Brick Dealers Resolve to Work Closer with Producers

THE FACE BRICK DEALERS' ASSOCIATION of America, which convened at French Lick Springs Hotel, French Lick, Ind., on Wednesday, December 5, had a very good attendance at its two sessions. President Burt T. Wheeler of the association addressed the meeting and declared that there had been made strenuous efforts to get together with the manufacturers in order to cooperate on various problems. However, he felt that much progress has been made and that the ideal contract form which committees of both the dealer and manufacturer associations prepared has been a big step forward in the annals of the Association.

Mr. Wheeler especially pointed out the lack of cooperation and support among dealers themselves. While the Dealers Association desired that a permanent secretary be appointed when it convened last year, the board of directors did not think it expedient to hire a paid secretary inasmuch as the funds for carrying on this work were not forthcoming. Those dealers who would be helped most by the association were especially lax in their support.

The ideal form of contract between manufacturer and dealer, which had been printed in tentative form and distributed, was discussed and, after reading, was officially adopted.

New officers for the ensuing year were elected as follows: R. N. La Bar, Scranton, Pa., president; W. N. Fry, Memphis, Tenn., vice-president; R. W. Tuller, Des Moines, Ia., secretary-treasurer. Directors were chosen as follows: John H. Donahue, Minneapolis, Minn.; John M. Stoner, Cincinnati, Ohio; R. W. Tuller, Des Moines, Ia.; L. J. Bolster, Louisville, Ky.; Burt T. Wheeler, Chicago, Ill.

(*Continued on page* 874)

Let's All Work Together

Is Plea of J. M. Adams, President of American Face Brick Association in Message Delivered at Annual Convention—Outlines Some of Industry's Needs

J. M. Adams

President and General Manager, Ironclay Brick Co., Columbus, Ohio

DR. MARS of the Department of Service has had a strenuous year. He not only prepared our great advertising campaign of 1923, but found time to go to Italy for the purpose of securing at first hand material for a book on Italian Brick Work. In this task he was very successful. With this wealth of material and with Dr. Mars' pre-eminent literary ability, we are assured a work that will be hailed with delight by the architects and face brick manufacturers of the United States and Canada. I feel sure that this publication will not only be of immense indirect profit to the Association but will be a source of direct profit thru sales.

In the following statements, Mr. Adams has touched on one of the vital problems still to be solved by the face brick industry:

"The Face Brick Industry will not have reached its full development until good face brick can be bought for immediate delivery in every city and hamlet in the country.

"There are many towns of considerable size where you cannot even buy the brick for a mantel out of stock. How small must be a town where you cannot buy lumber and cement for immediate delivery!"

The shortage of bricklayers has been a very serious handicap to our industry during the past year, resulting in the highest wages ever paid in this country for bricklaying. Competition among the mason contractors has resulted in premiums of from one dollar to three dollars per day over the scale fixed by the Bricklayers' Union.

According to the figures published by the National Association of Building Trades Employers there were 169,402 bricklayers in the United States in 1910, or 1 to 453 of the population. In 1920 this ratio had dropped to 1 to 805 of the country's population, showing a shortage of 63,362. This shortage increased during 1921 and 1922 rather than decreased.

Some of the more thoughtful of the labor leaders are beginning to realize that times have changed and that the ambitious young men will not serve an apprenticeship of from three to four years to learn a trade that a bright young man ought to master in two years. The apprenticeship for bricklayers in Ohio is four years.

Blames Mason Contractors

Nor can all the blame be laid on the Unions. Some of the blame rests upon the mason contractors because of their failure to insist upon their full quota of apprentices.

There can be no great reduction in the price of commodities, ours among others, until there is a decided reduction in wages or a greater production per man or a decided increase in the installation of labor saving machinery.

The shortage of labor in the crafts is going to continue until the craze for white collar jobs subsides. The average craftsman does not seem to want his son to follow in his footsteps but wants him to be a lawyer, doctor, engineer, or to enter some other lily hand occupation.

Cooperation is the watchword of the hour. I am fully persuaded that for any firm or any industry to reach its greatest success and broadest development there must be the fullest and most unselfish cooperation of all its members. We are far from this stage of development in our industry.

Opposing forces neutralize each other and the result is often naught, but united forces mean strength, power, accomplishment.

Full cooperation means faith in the integrity of our fellow members even if we do not always agree with them.

Unfair competition is an unmitigated evil, for whatever is deleterious to the individual manufacturer is deleterious to the industry as a whole and whatever is harmful to an industry is harmful to the whole industrial and social fabric.

Be not deceived. When we injure a competitor by unfair means, we injure ourselves and when we aid a competitor to turn out a better product, we help our industry and consequently help ourselves.

A fine example of cooperation is to be found in the automobile industry. Wm. Joseph Showalter, writing in the National Geographic Magazine on the automobile industry, says: "In no other field does one find such close cooperation as in the motor car industry. The manufacturers in the early days were forced to unite for the purpose of fighting hostile legislation and for making the public motor-minded. They found that they could make a better market for their individual cars by teamwork with competitors in selling the car idea. They learned that their success was linked with their competitors' success. So cooperative competition became their watchword. Young, virile men with imagination made this policy a tremendous success, so much so that they agreed among themselves to form a pool of ideas. In this pool there were about 500 patents and every member of the National Automobile Chamber of Commerce, which includes practically all the leading manufacturers, voluntarily agreed to let every other member use any or all of the features of construction and equipment owned by them individually without payment of royalties or other compensation. They hold that the better service all cars render, the greater will be the demand for their own."

With a spirit like this, is it any wonder that the rapid development of the automobile business has astonished the world?

What does the average face brick manufacturer do when his engineers work out an improved process of manufacture? He promptly patents the invention and uses it exclusively or makes the other fellow pay royalty.

There is yet much for our association to do in the way of educating our membership in methods of doing business.

It may be surprising to know that there are some brick manufacturers who fail to answer letters, do not acknowledge the receipt of orders even, and fail to insist upon having correct data on orders received.

Pay More Attention to Orders

Some dealers are careless about giving full information. How often it occurs that orders are delayed on account of special brick not having been ordered. These special brick were shown on the blueprints but neither the contractor nor the dealer took the trouble to look over the blueprints.

Just recently a job came to our notice where an order of brick to be laid in Flemish Bond with dark headers, was sent to the manufacturer. The order was simply for a certain shade of brick and nothing said about dark headers. Two or three cars of brick were shipped to the job and of course the dark headers were not included. The result was a vexatious delay. The manufacturer was censured and the owner discouraged in the use of face brick.

Be Proud of Your Product

Every manufacturer should insist that his dealers or contractors who give an order should give full information.

It should be the aim of every brick manufacturer to develop a product of which he is proud. It is a custom of some dealers to sell all brick under their own name. Every high grade brick should have a name and that name should be as well known in the territory served by that factory as a Packard, Cadillac or Ford automobile sold in the same territory.

Do you know of any automobile manufacturer who turns out a car and allows the dealer to label it and sell it under his own name? Do you think that the name of "Ivory Soap" is of no value to the firm who manufactures it? Do you think their business would have been as satisfactory had they made a soap and allowed the dealers to sell it under their own name?

Capacity Exceeds Consumption One-Third

We are in the midst of a great development in the face brick industry. As nearly as I can estimate, the capacity of the face brick plants of the country exceeds the normal yearly consumption by at least 33 1/3 per cent. Many new plants are being built and paving and common brick plants changing to face brick. Now, what are we going to do with this increased production? Are we to shut down our plants one-third of the time or allow many manufacturers to be put out of business with their less fortunately located plants, or are we to devise ways and means of increasing the consumption of face brick? It would seem to me that there should be no argument on these points.

78 Per Cent. Increase in Face Brick Use

From 1909 to 1919 there was a decrease of two-thirds of one per cent. in the sale of face brick, notwithstanding the increase in wealth and population. The industry up until 1919 had done nothing in the way of publicity, while the lumber, cement and stucco manufacturers had expended hundreds of thousands of dollars, if not millions, in exploiting their products. In 1919 we began our publicity campaign. In 1922 the increase in the use of face brick over 1919, or an average of ten years before, was 78 per cent. After making allowance for the war period of 1918, when building largely ceased, there is still a wide margin left, and I attribute this great increase in the use of face brick to the publicity and educational campaign of this association. We should not only continue our advertising campaign but we should increase it.

Believes Dealer Should Distribute Brick

Furthermore, I believe that much can be done to increase the sale of our brick by looking toward proper means of distribution. This is a mooted question. Some manufacturers feel that a large territory should be placed in the hands of one dealer. Others believe that every building material dealer in the United States should sell face brick. Personally, I am inclined to the latter method. However, every manufacturer is perfectly free to adopt whatever method of distribution he chooses.

There are 4,000 building material dealers in the United States rated at upwards of $20,000 each and many thousands rated at less than this amount. Of the 4,000, there are now many brick merchants who carry a full line of brick in stock; the rest are merely brick peddlers who sell from sample and the customer has to wait until the brick are shipped in.

What Perfect Distribution Means

There are many towns of considerable size where you cannot buy the brick for a mantel out of stock. How small must be a town where you cannot buy lumber and cement for immediate delivery.

One of the finest examples of perfect distribution is afforded by the Standard Oil Co. You can buy Standard Oil Products everywhere. There is scarcely a village so small that Standard Oil Products cannot be bought.

J. M. ADAMS

In some other lines of burned clay the manufacturers are keeping men on the road all the time, not selling but educating the trade in the use of their wares and the profits to be derived from their sale. This association could well afford to do the same thing.

The face brick industry will not have reached its full development until good face brick can be bought for immediate delivery in every city and hamlet in the country.

Don't Let George Do It

Now a word as to cooperation in the face brick manufacturing industry. There are many manufacturers who have received full benefits from the money expended and the efforts put forth by the association and yet they have never expended one dime or devoted one hour's time to the work that was necessary to be done.

Some are not in the association and helping to push because they really do not realize what a great work we are doing. Others have been kept out by financial or other problems, while there are still others who have not come into the association simply because they are perfectly content to let "George do it" and they deliberately propose to reap the benefits at George's expense. This last looks to me like a case of supreme selfishness.

Dealers Favor Face Brick Publicity

And what do the dealers thruout the country think of the benefits resulting from the work of the association? One of the most widely known brick and building material distributors in the country has this to say:

"The percentage of new houses being built with brick is increasing each month. This may be accounted for largely by the intensive educational campaign which has been conducted by the American Face Brick Association during the last few years. It has made the American public realize that it pays to build with a material which is at once permanent, fireproof, beautiful and in the end less costly than temporary structures."

Many wide-awake dealers concur in the above statement and fully realize the value of our publicity campaign to them as distributors. They realize that it is easier to sell face brick today than ever before.

What Has the A. F. B. A. Done?

The inquiry is sometimes made—"What has the American Face Brick Association done?"

It has raised the standard of ethics both in our own industry and among the face brick dealers thruout the country. Unfair competition has been greatly reduced. Our competitors are no longer looked upon as thieves and robbers.

It has established a uniform size for face brick and induced the Division of Simplified Practice of the Federal Department of Commerce to adopt the same.

It has established correct cost accounting in the industry, one of the great achievements of the association.

It has supported expert research work along the line of brick burning and conservation of fuel.

Lower Freight Rates Secured

It performed a Herculean task in securing lower freight rates and in setting our product in a correct light before the Interstate Commerce Commission.

It is at work vigorously on the problem of increasing the supply of bricklayers.

In the last 3½ years it has expended approximately $900,000 in educating the public as to the superiority of face brick as a building material.

It has created a high class literature for our industry. Our publications are now to be found in hundreds of libraries and are used as auxiliary text books in many high schools, colleges and universities; and, in addition to this, eight or ten films are in constant use thruout the United States illustrating the manufacture of face brick.

Has Put Industry on High Plane

It has put the face brick manufacturing business high on the roll of important industries. Our sons need no longer hesitate to follow in our footsteps.

It has thru prompt compilation and release developed practically the only authentic source of information regarding the trend of conditions within the industry.

It has established an avenue of communication between our industry and the Federal Government.

It has manned the watch tower of progress and guided the industry to greater heights of usefulness and public esteem than ever before attained. In fact, it has done everything that has been done in the last 12 years to make our industry better and broader and has proved to the world our right to exist, for neither the individual nor an industry has any excuse for existence unless it adds something to the sum total of human happiness. And who has brought all this about? Approximately a hundred unselfish, far-visioned manufacturers who make up the American Face Brick Association.

Mr. Adams' Message

We are at the threshold of another year. Opportunity beckons. Let us remember that we never rise above our aspirations. Let us enter upon the duties of the New Year with a renewed courage and an enlarged vision, remembering always that

"We live in deed, not years: in thought, not breaths:
In feelings, not in figures on a dial.
We should count time by heart throbs. He most lives
Who thinks most, feels the noblest, acts the best."

* * *

FRECHETTE WORKING ON CERAMIC PROBLEMS

Howells Frechette, chief of the Ceramic Division, Mines Branch, Ottawa, has returned from a trip to Western Canada where he was securing samples for a ceramic exhibit at the British Empire Exposition next year. Mr. Frechette has been visiting brick plants in Ontario and Quebec and is securing first hand information on clay-working conditions. His surveys will also be extended to include the other provinces. At the Ceramic Division offices, Ottawa, there is on display a fine exhibit of finished products as well as samples of clays showing various defects which have been corrected by investigations of the branch. Some brick show cores of carbon, forcing the outer shell to crack like the skin of an oven-roasted potato. Others show the effect of pebbles and stones in clay. Others are covered with kiln scum which masks the true color of the brick and which the Branch shows can be obviated by the use of certain chemical antidotes.

* * *

HALF-MILLION NEGROES GO NORTH

478,700 negro migrants forsook their abodes and occupations in 13 southern states during the year September 1, 1922, to August 31, 1923, according to announcement made by secretary of labor thru Phil H. Brown, commissioner of conciliation, who was specially detailed to observe the present movement of migratory negro labor. This conclusion is based on a series of figures submitted by civic, municipal and state statisticians and authorities of the southern states. Oklahoma yielded 1,000; Texas, 2,000; Kentucky, 2,500; Arkansas, 5,000; Tennessee, 10,000; Louisiana, 15,000; North Carolina, 25,000; South Carolina, 25,000; Mississippi, 82,600; Alabama, 90,000; Florida, 90,000; Virginia, 100,000; Georgia, 120,600.

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CANADIANS ANNOUNCE SPEAKERS

The Canadian National Clay Products Association hold their 32nd annual convention on February 13 and 14. The annual banquet will be on the evening of the 14th and the speakers will be Hon. George Ferguson, Prime Minister and Minister of Education for Ontario and Rev. Dr. H. J. Cody, former Minister of Education and one of the outstanding orators and ministers in Canada.

* * *

NEW COMPANY FOR TEXAS

The Bridgeport Brick Co., Dallas and Bridgeport, Tex., has been incorporated with a capital stock of $320,000. H. G. Leonard, W. H. John, J. F. Lillard and others are named as incorporators.

How Good Silica Brick Are Made

Part 5

Dealing Principally with Burning and Reduction of Kiln Breakage

E. E. Ayars

Chairman, Refractories Division, American Ceramic Society

EVERY SILICA BRICK manufacturer has from time to time made some study of burning conditions, but the findings have never been published and there has been little or no cooperation among producers to develop burning methods. The two most important aims of such research are to reduce breakage and fuel consumption, while the reduction of labor costs and the possible adoption of oil for fuel are a second consideration not to be overlooked.

The matter of kiln design has been worked out to such an extent with the present type of fuel that little can be accomplished in that direction. A change in the method of firing coal by the adoption of stokers would increase the efficiency of the fuel and it would certainly lighten the now arduous task of firing. The use of oil for fuel would probably necessitate some changes in kiln design and the alkaline ash might have some effect on the ware, but it is worth experimenting on, as the ease of control and saving in attendance and fuel handling would be a large item.

Reducing Kiln Breakage

The reduction of breakage will require a great deal of study and cooperation before any solution is available. The first step is to determine just what is actual kiln breakage and when the causes are developed a remedy may be applied to each.

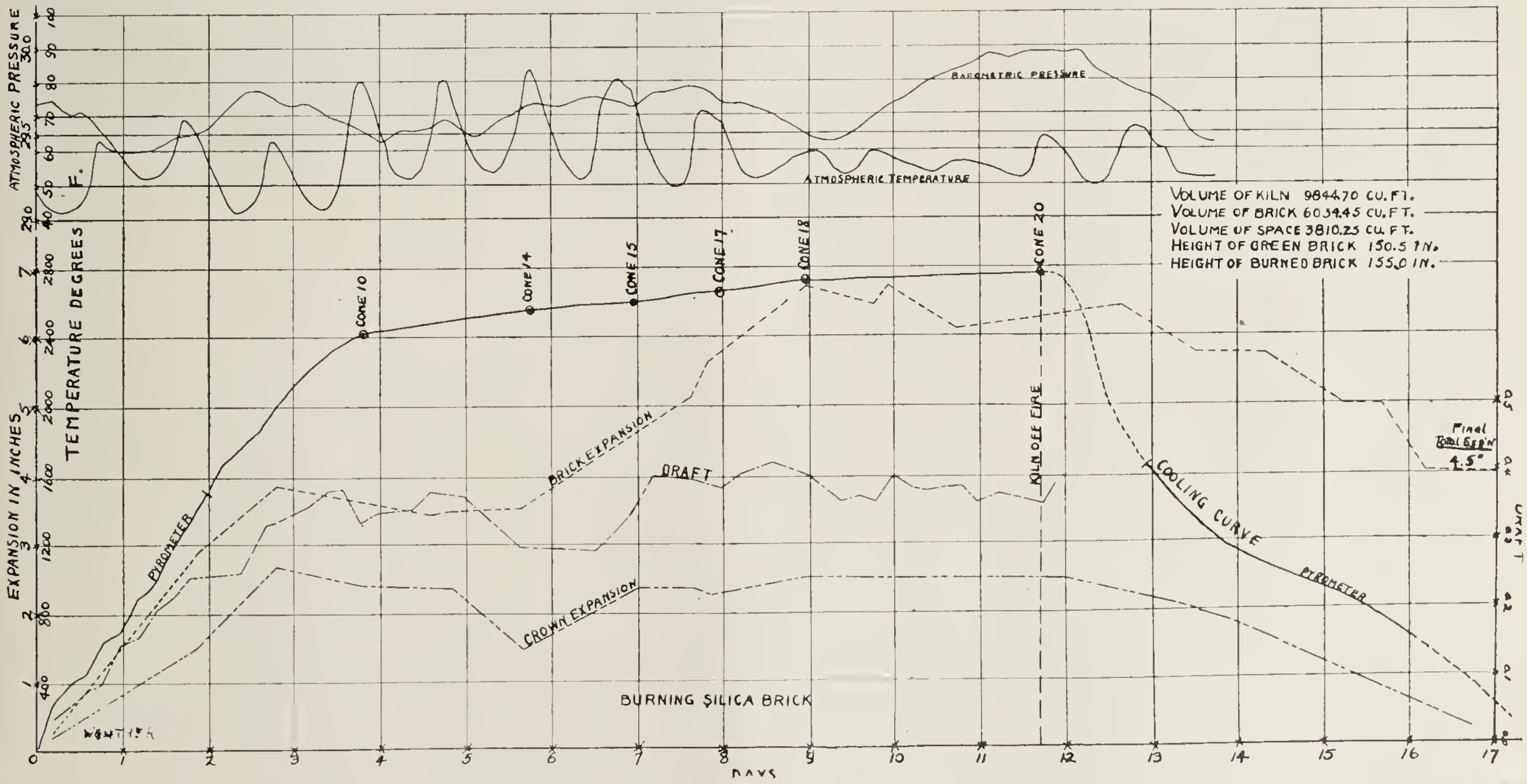
During the past year an investigation was started having in view the reduction of kiln breakage. Certain conditions later arose which prevented the completion of the work. Some of the data collected in the preliminaries may be of interest.

It has been established by laboratory experiment that there are two distinct stages in the inversion of quartz to cristobalite and trydimite where the volume increase takes place rapidly. During the first of these rapid inversion stages, at least, there is a great tendency toward the formation of cracks in the brick and if the heat is advanced too rapidly thru this stage complete fracture or breaking up may occur.

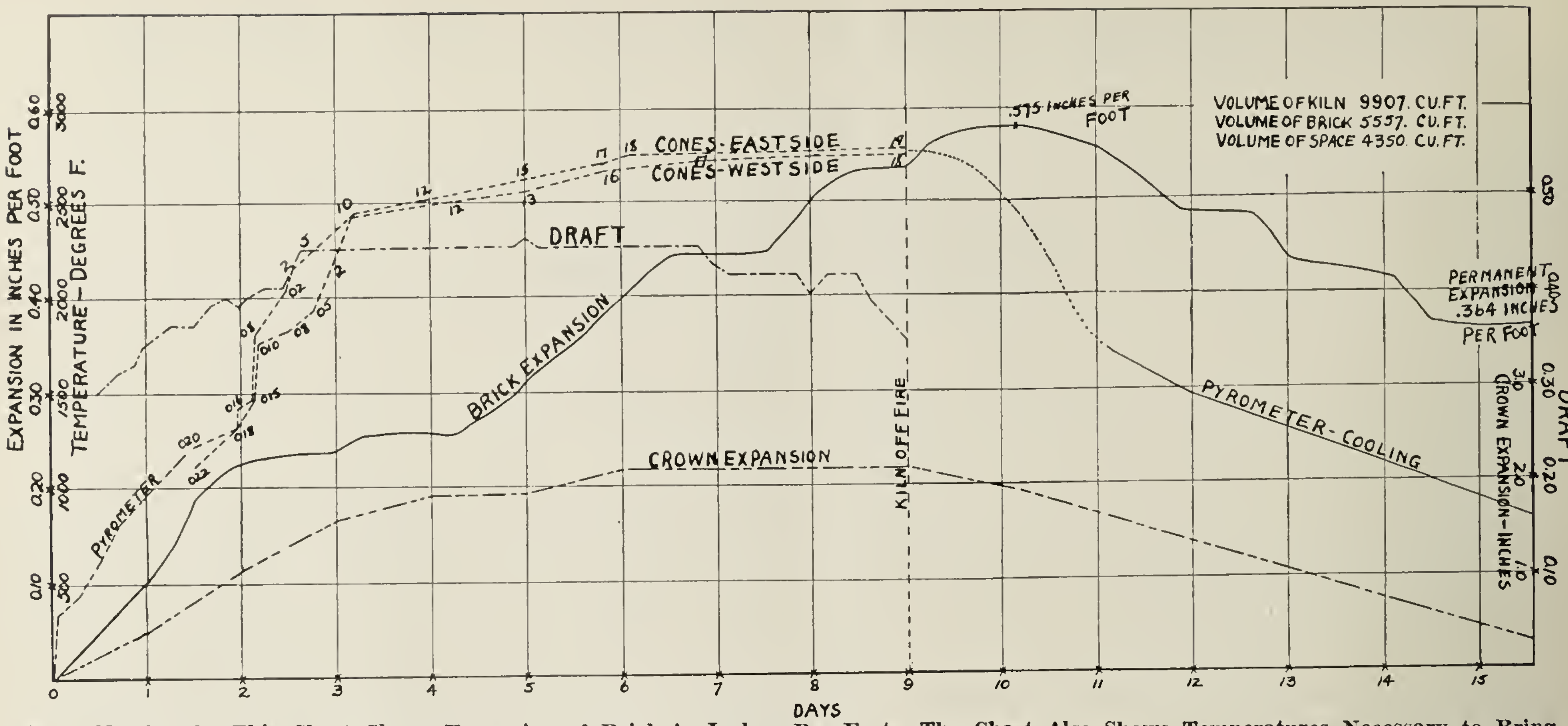
Setting Done With Care

In the study of burning conditions it appeared advisable to determine and plot an expansion curve for an entire kiln of brick. Simultaneously temperature and draft conditions were noted and various other observations made intended to make the history of the burn as complete as possible without taking flue gas analyses or making a heat balance.

More than the usual amount of care was used in preparing the kiln and in setting it, to insure the best possible conditions for the tests. The total volume of the kiln as well as the volume of setting and dead air space was determined, as were also the flue and stack areas. A base metal couple recording pyrometer was used during the early stages of the burn and the temperatures registered checked with Orton pyrometric cones set in the bench near the door. Only one thermo-couple was used, it being placed in the crown. The temperatures registered were thus known to



Burn Number 1 Described in the Article. This Is One of the Most Interesting Charts of a Silica Brick Burn Ever Drawn. It Shows in Addition to Draft and Time Temperature, the Expansion of the Brick in the Kiln and the Crown of the Kiln. This Expansion Is Plotted in Inches. These Curves Are Fully Explained in the Text



Burn Number 2. This Chart Shows Expansion of Brick in Inches Per Foot. The Chart Also Shows Temperatures Necessary to Bring Down the Various Cones. These Curves Are Commented On in the Article

be always somewhat in advance of the temperatures in the setting, especially during the early stages of the burn. When the temperature reached 1,500 deg. F. the base metal couple was removed and thereafter Orton cones were depended on for temperature measurement. A Leeds and Northrup optical pyrometer was used occasionally to check the high temperatures, but no regular readings were taken to be made a part of the record. Several pats containing cones 16, 17, 18, 19 and 20 were placed in various parts of the setting to determine whether there were any variations in temperature in different parts of the kiln. It was found that a variation of from two to three cones may be expected even in a well balanced kiln, while in the case of kilns having restricted flues or poor setting the variation may run as high as six or eight cones.

Control of Temperature Rise

An Ellison draft gage was installed in the main tunnel between the kiln and the stack and hourly readings taken.

The first aim was to determine whether control of the speed of temperature rise during the rapid inversion stages would reduce breakage. The first of these stages occurs early in the burn between the temperature of 500 and 575 deg. C. and it is the most dangerous on account of the comparative ease of passing quickly thru this temperature range. The second stage occurs above 1,200 deg. C. and it is doubtful whether much breakage can be attributed to rapid increases in temperature above this point, as the brick are hot enough to be in a state of semi-flux and inversion should take place rapidly without damage.

Breakage Results from Rushing Fires

An early method of kiln burning consisted of rushing the fires from the time of lighting to the finishing temperature. The crown ports were all closed at the end of 24 hours. Due more or less to the character of the rock then in use the breakage was not excessive. Later the breakage began to run high and it was found that by raising the heat more slowly at the start the breakage was reduced. A recording pyrometer was installed and a standard time temperature curve adopted. The standard practice developed was to raise the temperature at the rate of 100 degrees every three hours from lighting to 1,500 deg. F., when the thermo-couple was taken from the kiln.

Good results were obtained altho the usual difficulty was experienced with firemen who regarded the "pipe" as a "jinx" on their bonus money.

Experiment With Temperature Rise

It was thought that by reducing the rate of temperature rise to 100 degrees in five hours thru the first dangerous stage of expansion that even better breakage records could be obtained. In averaging several tests, however, very little effect on breakage was noted and the net result of the experiment seems to be lengthening of the burning time. After raising the temperature at a certain rate of speed for a time, reduction of the hourly rate of increase even for a few hours seems to affect the later behavior of the kiln to a considerable extent. The first rate of temperature rise can only be restored with great difficulty and the total burning time may be unavoidably extended from one to three days.

It appears that a temperature increase of 33 degrees per hour will give good results both in total burning time and amount of breakage. A lower rate of heat input lengthens the burn and does not help breakage.

Expansion Accurately Measured

The expansion of the center bench in each kiln was observed in the following manner. The exact height of the bench above the floor was measured, the number of inches of old silica stretchers in the setting being noted. The width of the bench, together with the number of brick in the row measured, was recorded. A transit was set in an adjacent building commanding a view of the kiln crown from the window. The leveling rod used was of special construction, the lower part being three-quarter inch pipe for insertion into the kiln. Before the kiln was lighted two stadia points were established, to facilitate resetting the transit if necessary, and the height of the bench measured with the leveling rod inserted thru a crown port. After lighting the expansion was measured three or four times daily. Readings were taken at night, the slide of the leveling rod being illuminated by a flashlight. Observations were continued until the kiln was cold and on emptying the kiln the height of the bench was measured to check the final reading taken with the instrument. The results showed that the method had been as accurate as was really necessary. The width of the bench was again taken and the amount of expansion noted to be normal.

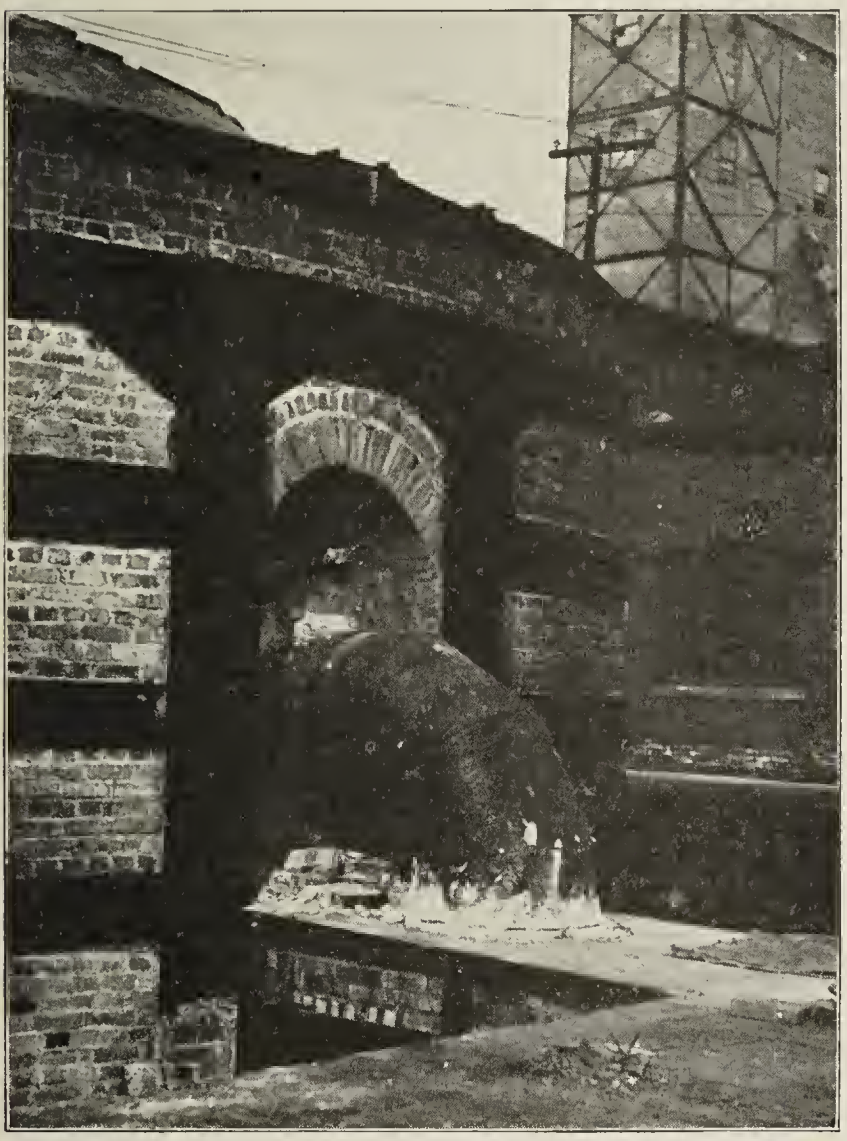
Kiln Cooled Slowly

The time-temperature, draft and expansion curves were plotted together. As a matter of interest, the expansion of the kiln crown was observed and a curve plotted.

When one kiln came off fire it was closed up as tight as possible to exclude air and allowed to cool slowly. As soon as the temperature fell to 1,700 degrees the thermo couple was inserted in the kiln and a cooling curve taken. Cooling from cone 20, the finishing temperature, during the first 53 hours the kiln lost heat at the average rate of 20 degrees per hour. In the next 91 hours the average hourly loss of heat was only 10 degrees and gradually reduced to 5 degrees per hour just before the kiln was opened. The kiln cooled to 900 degrees in six days and was opened on the eighth day.

Cooling with Waste Heat System

The standard cooling practice on yards equipped with a waste heat dryer is to allow the kiln to soak about 24 hours. At the end of this time the kiln is attached to the waste heat system and the heat pulled out by a fan. This cools the kiln rapidly enough to be opened on the fifth day. During the first 48 hours one such kiln lost 1,600 degrees, or an average of 33 1/3 degrees per hour. In the succeeding 48 hours the temperature loss was approximately 500 degrees, or an hourly average of ten degrees.



This Picture Shows a Kiln "Goosenecked" for Conveying the Heat to Waste Heat Dryer

Rapid cooling is responsible for a certain amount of breakage, especially after the setting gets down to a dull red heat and lower. The abrupt volume changes mentioned in connection with heating up at temperatures around 500 deg. C. also occur to a certain extent in cooling. The brick are liable to check and crack, as they are unable to adjust themselves to rapid temperature changes at this stage.

Cutting Off the Waste Heat Dryer

The waste heat dryer exhausts heat from the kiln so rapidly that the kiln should be cut off as soon as it gets down to a dull red heat and allowed to cool slowly. Cooling breakage will be low if this plan is followed, altho the kiln turnover will be slower and capacity correspondingly reduced. The amount of breakage actually traceable to cooling is relatively small and the average operator will ignore it altogether and run the dryer and kiln to capacity rather than attempt to take advantage of the possible reduction in breakage.

The following tabulation of data secured on the first burn is of interest:

FLUES

Number of Flue	Cross Section Sq. Inches	Number Holes	Area of Holes Sq. Inches
1	185	7	399
2	234	7	266
3	208	8	304
4	130	8	268
5	100	8	268
6	216	7	258
7	198	7	280
8	1,444	9	378
	2,715	61	2,421

Cross section of stack	1,296	square inches
Height of stack	37 feet 10 inches	
Height of green brick	150.5	inches
Final height of burned brick	155.0	inches
Expansion per foot green brick	0.359	inches
Mold allowance per foot	0.375	inches
Greatest expansion under heat per foot	0.538	inches
Per cent. permanent expansion	3.0	
Nine inch equivalent of green brick set	74,780	
Nine inch equivalent of old silica	28,200	
Percentage of old brick used	27.38	
Percentage of green brick set	72.62	
Volume of kiln	9,844.70	cubic feet
Volume of brick	6,034.45	cubic feet
Volume of space	3,810.25	cubic feet
Percentage space in kiln	38.73	

A floor plan of setting, shown here, shows dimensions of spaces between benches and walls of kiln at the floor line.

Expansion of Crown and Ware

By referring to the curves printed here it will be noted that during the first five days of the burn the expansion curve of the crown followed the expansion of the brick closely. Up to the fifth day the kiln burned freely and appeared to be making excellent progress, but between the fifth and sixth day a noticeable change in behavior took place. It appeared as tho the setting had shifted on one side, closing the spaces between the benches, thus reducing the draft on that side and holding the kiln back. However, the other side still burned freely and continued to gain heat, altho not as rapidly as it should. There was a perceptible drop in the draft at the same time, as will be seen from the curve.

Crown Pushed Out of Place

On plotting the expansion curves it was apparent that one of the center benches had been set too close to the crown and on expanding had lifted it. On the fifth day the upward pressure was suddenly removed by a shifting of the bench and the crown settled down to a normal position only to be again pushed up by the expanding bench. On the seventh day the crown reached its maximum height and the brick continued to expand, indicating that another shift of the bench had freed it from the crown. When the kiln was opened the benches on this side were found to be leaning toward the center and the draft spaces provided practically closed up. Brick were found sticking into the crown where the shifting of the bench had left them. It is probable that the setting would have remained in its proper position if this one bench had not shifted due to the pressure exerted against the crown.

The burning time of the kiln was lengthened considerably by this accident as the kiln had to be held on to bring the heat of the affected side up, which could only be accomplished by soaking after the proper draft conditions had been destroyed.

Expansion Curve Recedes as Kiln Cools

It will be noted from the brick expansion curve that the kiln appeared to lose heat on the ninth day, regain it again at the beginning of the tenth day, and then to lose almost steadily until taken off fire. There was, however, a slight increase in heat during the last 24 hours of the burn and for almost a day immediately following the close of the kiln the expansion gained slightly under the soaking heat.

It is noteworthy that as the kiln cooled the expansion curve receded until it reached its lower limit on the fifth cooling day. The permanent expansion was observed to be 4.5 inches and, figured on the basis of the height of green brick, amounted to 0.359 inches per foot, which is practically a three per cent. linear increase. The normal allowance is 0.375 inches per foot and amounts to 3.1 per cent., so that, as far as expansion is concerned, the burn may be said to be entirely satisfactory from the standpoint of the data taken. On measurement the brick were found to average about one thirty-second of an inch short, which indicated that they were not burned as hard as is normally desirable, altho they were well within the usual manufacturing limits.

Checking Results of Firing

Two methods of checking the results of firing are in common use. The first and most reliable of the two is the draw trial. Nine inch brick are taken from the top of the setting thru the crown port holes and allowed to cool until they can be handled. The trials are measured and then broken open to determine whether the brick look properly burned out, in which case there are no dark spots, indicating unburned ganister, in the mass. If the measurement shows the proper amount of expansion and the mass is free of dark spots, it is usually considered safe to take the kiln off fire, provided it has an even heat thruout.

Using the Seger Cones

The second means of control is the Seger cone, which is only reliable under the best conditions. If the kiln loses heat, which happens often, after it has reached a reasonably high temperature, the cones fail to respond to a succeeding rise in temperature and cannot be depended upon to indicate the results accomplished, even tho the heat may go considerably beyond the range of the cones. This is one serious drawback to the use of cones for commercial firing and too much dependence should not be placed in them. On examining the cones set in various parts of the kiln to check the burn it will be noted that considerable variation existed. Cones set near the top of the kiln in five different positions showed the following results:

Center	17 tipping
Northeast corner	17 down
Northwest corner	17 tipping
Southeast corner	18 tipping
Southwest corner	18 tipping

Cones placed in the regular positions in the second bench from the door on each side, one set 18 inches from the floor and the other set 54 inches from the floor, showed the following treatment:

East side, top	18 tipping
East Side, bottom	17 down
West Side, top	18 half down
West Side, bottom	17 down

A complete series of cones from cone 10 to cone 20 was placed in the first bench from the door in view of the top peephole on the east side. Cone 19 was down and cone 20 tipping. These cones were used in connection with the pyrometer to plot the temperature curve of the burn. On comparing the physical appearance and expansion of the brick from various parts of the kiln it was found that they had received as near the average heat treatment as is commonly found in commercial firing. Very few underburned brick were encountered and the total kiln loss amounted to 5.34 per cent., a large percentage of which was very difficult gas machine shapes and large electric furnace roof shapes, which normally show a high kiln breakage.

Expansion as Check on Firing Results

The measurement of the total expansion of a kiln of brick in the manner described may be regularly used to check the results of firing and determine when the kiln is properly burned. The height of the green brick bench may be measured and the total expansion required computed. One reading before the kiln is lighted will establish the height of the bench from the outside, and toward the end of the burn two or three measurements will usually be sufficient to check the expansion.

The second test burn made on another kiln was completed under slightly better conditions, the total burning time of the kiln being nine days. The kiln was started on a hot stack and better draft was available at the outset than with the average burn.

Reasons for Cold Spots

One of the principal reasons for cold spots and uneven heat distribution is the fact that draft is sluggish at the outset of the burn. It has been determined that 72 hours are required under ordinary conditions to bring the temperature of the stack and center of the setting to the same temperature as the top and rim, while with a greater initial draft this result is accomplished in a much shorter time. It is highly probable that less breakage would be encountered in kilns with a high initial draft, burning small bright fires, the temperature rise to be governed by the amount of coal fed to the furnace.

A typical draft schedule in use on some plants is as follows:

1st day	.15 to .16 inches
2nd day	.16 to .18 inches
3rd day	.20 to .22 inches
4th day	.24 to .26 inches
5th day	.26 to .28 inches
6th day	.30 to .32 inches
7th day	.34 to .36 inches
8th, 9th, and so forth	.38 to .40 inches

There is nothing unusual about this schedule except that it is merely the natural course of draft and no effort is required to maintain it.

Increasing Draft

It would be difficult to secure a higher initial draft except in the case of a hot bottom and stack or by the use of a suction fan attached to the stack. The fan should be attached in such a manner that the heat is pulled thru the bottom of the stack to heat it up and avoid a drop in draft when the fan is taken off; 36 to 48 hours should be sufficient time to operate the fan and the draft should be at least .25 inches up to the fourth day, after which it will increase naturally to about .35 or .40 inches.

A series of cones ranging from cone 022 to cone 20 was placed in each side of the kiln and the temperature curves indicated plotted independently as a matter of interest. The crown expansion was again recorded.

When the brick expansion curve was plotted it was laid out in inches of expansion per foot of height of the brick bench. The results of the first burn were plotted directly as expansion in inches.

Brick Expand After Firing Stops

After the kiln was taken off fire the brick continued to expand and gained .04 of an inch per foot under the soaking heat. The greatest expansion under heat was .575 inches per foot, while the final total permanent expansion was .364 inches per foot, which amounts to three per cent. linear expansion. The brick measured nine inches. Actual kiln breakage amounted to 3.64 per cent., most of which occurred in very difficult shapes for gas machine settings. This kiln was not goosenecked for waste heat, which may have something to do with the low breakage experienced, altho that fact was not established.

The following data are of interest:

Cross section of stack	1,560	square inches
Height of stack	45 feet	2 inches
Height of green brick	146	inches
Final height of burned brick	150 7/16	inches
Expansion per foot of green brick	0.364	inches
Mold allowance per foot	0.375	inches
Greatest expansion under heat per foot	0.575	inches
Per cent. permanent expansion	3.0	
Nine inch equivalent of green brick set	78,031	
Nine inch equivalent of old silica set	17,800	
Percentage of old silica used	18.57	
Percentage of green brick set	81.43	
Volume of kiln	9,907	cubic feet
Volume of brick	5,557	cubic feet
Volume of space	4,350	cubic feet
Per cent space in kiln	43.91	

Four Test Burns Made

Four test burns were made in the manner above described when it became necessary to discontinue the investigation and the real aim was not accomplished, altho much interesting data were collected which may serve as a foundation for future work.

American burning methods have developed out of European practices altho it is doubtful whether we have improved upon them in any way except to fit our kiln systems into the American idea of plant efficiency where the low capacity kilns common in France and Germany seem out of place. The fact is we have gone to the extreme in our attempt to secure low fuel consumption per ton of ware by building larger and larger kilns of the periodic type. Fuel was at one time cheap and easily available in this country while it has always been more costly and difficult to obtain on the Continent, which gave an added incentive to keep fuel consumption low. In the past few years American manufacturers have paid dearly for their large capacity kilns by increased burning costs, altho it may be said that it would be difficult to turn out large capacities in the small European kilns.

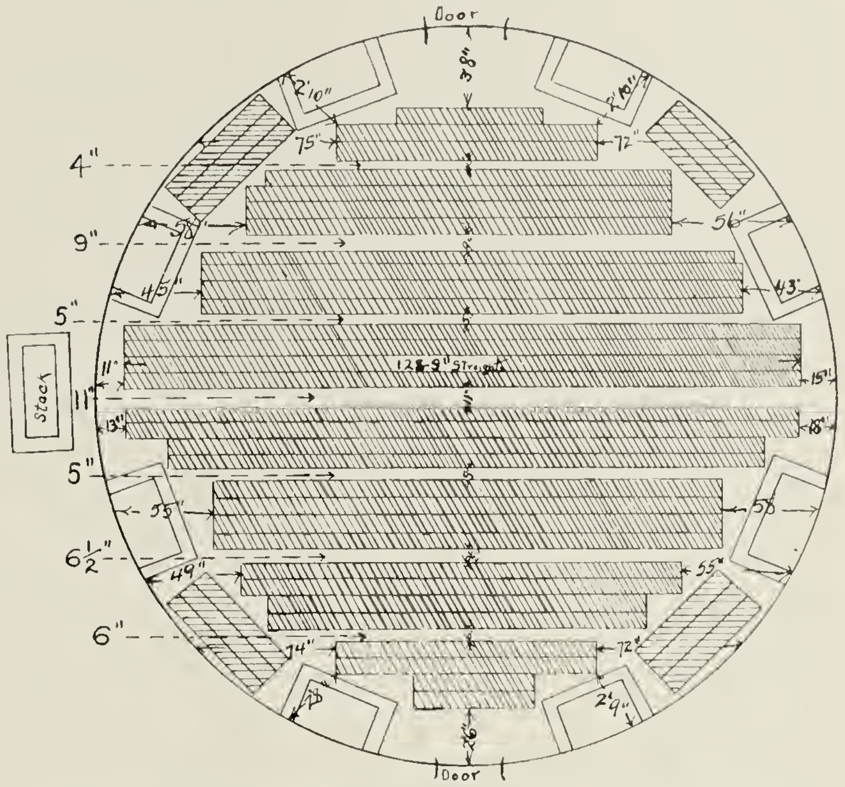
France and Germany Use Continuous Kiln

The most used kiln in both France and Germany is the continuous chamber ring kiln of Hoffman or similar design. Rings may consist of 20 or more chambers, each having a capacity of approximately eight tons or 2,500 nine inch brick and four chambers are usually under fire at one time. Each chamber is supplied with grates and auxiliary firing with powdered fuel is done thru the crown of the kiln. The fuel consumption is remarkably low being between 10 and 12 per cent. of the weight of the brick or from 200 to 240 pounds of coal per ton of ware. Our best American practice uses from 700 to 1,000 pounds of coal per ton of ware, while in cases where brick are being burned to cone 20 as much as 1,200 pounds of fuel per ton may be consumed.

European brick are usually burned to 1,450 deg. C. and cone 14 melted down flat, which corresponds to cone 15 in the common parlance of kiln burners. American brick are burned from cone 17 to cone 20 depending on the raw material used and the service for which the brick are intended.

Raw Materials Different in Germany

Quartzites used in Germany vary in structure more than American raw materials and some of them invert to the lower forms of silica more readily. A large tonnage of ware was produced during the war from Westerwald quartzite which is a sort of flint or chert and really not a very satisfactory raw material altho the specific gravity of the brick burned at cone 14 was 2.36 to 2.38. Lately it has been possible to use a large amount of Hessian quartzite either straight or in mixtures and the quality of the brick produced has been improved. Hessian quartzite is a rock similiar to that found in the American Medina and Baraboo formations.



Plan of Setting of Number 1 Burn. Shows Shape of Benches at Floor and Distance Between Walls of Kiln and Brick Setting, and Distance Between Benches

Under ordinary manufacturing conditions brick made of this material and burned at cone 14 show a specific gravity between 2.40 and 2.45. In order to reduce the specific gravity to within the accepted limits special grinding methods were developed and as a result of this differentiated preparation brick are burned at cone 14 with approximately 12 per cent. of fuel having a specific gravity of 2.35-2.38. They are said to be equal in point of service to the best brick available anywhere.

Burning Breakage Higher in Europe

Burning breakage encountered in the chamber ring kiln amounts to from six to eight per cent. which is high for standard brick when compared with American practice. Actual kiln losses should not run higher than four per cent. except where large tonnages of difficult shapes are burned in which case the losses may reach 10 or 12 per cent. and the total plant breakage be 15 per cent. or more.

The tunnel kiln has not as yet been adapted to the burning of silica brick in this country altho there are twin installations in Germany which have proven successful. These kilns are fired with producer gas and operate at cone 14, the cones being placed on the bottom of the cars where they are melted down. The total burning time is approximately 80 hours. Standard brick and difficult shapes are burned together, the average kiln breakage being about 15 per cent.

Tunnel Kilns Have Small Capacity

One of the principle reasons for the success of the tunnel kiln in Germany for burning silica brick may be found in the comparatively low temperature to which the brick are burned, and the refractory used in the construction of the kiln has not been pushed to the limit of its endurance.

American burning temperatures are considerably higher and operators have not had sufficient confidence in our kiln refractories to undertake the construction of such kilns, altho there are some tunnel kilns burning other products at cone 18 successfully.

The largest practical capacity for a tunnel kiln for silica brick has been estimated at 24,000 nine inch equivalent per day and as the majority of our plants have at least double and many of them four or five times that capacity, it would necessitate building from two to five or more kilns and altho it would undoubtedly pay, the first investment would be enormous. It would appear that the burning temperature might be lowered by changing the screen analysis of the brick mixture and still produce a satisfactory brick of low specific gravity. In this case the task of adapting the tunnel kiln to American practice would be less difficult.

Summary

A GREAT DEAL OF BREAKAGE has been charged to burning, which some believe may be eliminated by a return to the "old time" slow burning schedule. Ganister from different sections varies and no standard practice can be laid down for all plants, and each problem must be worked out separately. To return to the old methods without thoro investigation would constitute a decided step backward, and the chances are good that the expected improvement in breakage records would not be realized. It would be much more to the point to determine by experiment the highest possible rate of heat input that a kiln will stand and to establish a standard practice controlled by a pyrometer. Without doubt many burning schedules now in use could be speeded up, instead of retarded, especially during certain stages of the burn, without damage to the ware, altho it would be absolutely necessary to control the process by scientific methods.

Little Breakage Due to Burning

In the writer's opinion burning is only responsible for a negligible quantity of breakage, provided proper control is exercised over the process. The only dangerous period is during the early stages of the burn, when the heat must be advanced slowly and uniformly. After the temperature has reached 600 deg. C. it appears that the highest commercially feasible rate of heat input will cause no damage.

Breakage is purely a mechanical problem and must be handled as such. Molding and drying methods are responsible for probably 90 per cent. of the total breakage in the average plant. To begin with, the condition of molding equipment has an important bearing on losses. Worn, weak, or poorly fitting molds will not produce perfect brick, and rough or weak pallets will damage the most carefully molded product. Inexperienced or careless molders contribute liberally to the breakage record. Reckless handling of all classes of brick on the cars or hot floor by car pushers, hackers, and wheelers, and in the kiln by setters accounts for a certain proportion of the total loss.

Improper Drying Causes Much Loss

To improper or rapid drying with the waste heat dryer may be laid the largest percentage of manufacturing loss. Defects of molding show up after drying, and in addition many properly molded brick are damaged as a result of the indifferent treatment they receive in the dryer. Some molding defects do not show up until the brick are burned, as is also the case with certain drying defects. These losses are charged to burning and as a consequence are rarely corrected. The most common cause of kiln losses is poor setting, in which the weight of the benches is improperly distributed, or large shapes may be set so as to support more weight than they will stand. The effect of the manufacturers' breakage problem is largely a matter of costs and its influence on the quality and service of the good brick produced is not very marked. Constant progress has been made toward the improvement of quality and workmanship, and considering the present methods, silica brick give as uniform and satisfactory service as can be expected.

Manufacturer Too Much in Ignorance

In this connection is must be noted that the manufacturer is hampered in developing his product by a lack of knowledge of the exact service requirements his brick will meet, and up to very recent years the consumer has shown little disposition to be of assistance. Happily for both there is a tendency for the consumer to study furnace conditions with the refractories manufacturer, and additional improvement in service may be looked for. This will lead to greater demands on refractories by furnace designers and operators, and the further developments of furnaces and refractories will go hand in hand.

In meeting the situation the manufacturer will adopt more scientific methods to his processes which, in addition to improving the quality of his brick, will reduce manufacturing losses and costs.

Acknowledgments

During the writer's experience the published works of several investigators have been a regular source of information on raw materials, the manufactured product, and service conditions. No quotations have been taken from these authors, rather than that it has been the writer's aim to link recent technical investigations with manufacturing methods. The writer wishes to acknowledge his indebtedness to the writings of Messrs. D. W. Ross, W. A. Hull, J. S. McDowell, K. Seaver, R. M. Howe, F. A. Harvey, E. M. McGee, K. Endell, Le Chatelier and Bogitch, and others.

The data on burning presented in this article were secured by Messrs. C. A. Underwood and H. Larsen, and compiled by Mr. Underwood while associated with the writer.

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MAY TEST INSULATING VALUE OF WALLS

A meeting was held October 22, 1923, at the Bureau of Standards, Washington, D. C., for the purpose of discussing and arranging for a series of tests on typical exterior wall construction in order to develop information as to the kind of construction and materials that will possess the highest insulating values. Representing the clay industry at this meeting were William Carver, Common Brick Manufacturers' Association; Frank J. Huse, Hollow Building Association, and H. W. Stringer of the American Face Brick Association.

Dr. Van Deusen of the Bureau of Standards, told of the work now being done at the Bureau. He stated they were making tests of the heat transfer thru eight inch brick walls plastered one side, eight inch brick walls furred, lathed and plastered one side, eight inch hollow tile walls plastered one side, tile laid vertical, eight inch concrete blocks plastered one side, two by four inch studding, lathed and plastered one side, sheathing, paper, furring, metal lath and stucco the other. 20 panels would be sufficient to complete the work contemplated by the Bureau, according to Mr. Van Deusen. It has required about four weeks to test one panel, but it is expected to test one panel a week in the future. About $10,000 a year, it was estimated, would be required to carry on the investigation as outlined. The members of the committee voted to urge their respective organizations to donate the necessary materials and appropriate an amount not to exceed $1,250 to carry on this investigation in cooperation with the Bureau of Standards.

Capital for the Clay Industry

Part 3

Telling How to Secure Capital for Developing of Improved Apparatus or A New Idea in the Trade

J. K. Moore

Consulting Engineer: New York City

Author's Note.—In discussing the raising of capital for an improved apparatus or a new idea in the trade, it is believed that it would be of value to the producer or inventor to know something of the procedure necessary to protect his capital, which makes the development and the fabrication of the improvement a success.

The writer wishes to acknowledge the assistance of Mr. Nelson Littell, Patent Attorney of this city, for his help in the preparation of this article on Patents.

WHEN A MAN HAS MADE an invention, his first question is how to protect it, and the second is how can he benefit most by it.

Contrary to popular opinion secrecy is **not** a good way to protect an invention upon which one expects to receive a patent, as patents for inventions are granted to the first inventor who discloses to the public how to make, use, construct, or compound something which it has heretofore not known how to do.

The inventor cannot, therefore, keep his invention secret without running the risk that some other inventor may make the same invention and disclose it first.

Make New Ideas Public

It is therefore advisable, as soon as the idea behind the invention has formulated into a concrete conception to make a complete disclosure by preparing a written description supplemented by sketches or drawings when necessary, dated and signed. Then the idea should be explained to one or more friends who are capable of understanding the invention and who can be trusted, and they should be asked to witness the description by signing their names and the date of the disclosure on some part of the description or sketches. To facilitate proof of the authenticity of the disclosure and the dates thereon in case of a dispute in the future as to the priority of the invention it is also advisable to take oath before a notary public as to the conception of the invention and the date thereof, having him date the oath and impress his seal upon each sheet of the description and sketches.

Searching Patent Office Records

The next step before going to the expense of constructing a model, is to have a search made thru the records of the Patent Office to discover whether the invention has been known before. The Patent Office does not make these searches, but they can be made at a small cost (five dollars up) by any patent attorney from copies of the sketches and description or by the inventor himself if he finds it more profitable to take the time and money necessary for a trip to Washington, than to entrust the matter to an attorney. The charge for searches of this kind is upon an hourly basis, and depends therefore upon the time consumed in making the search. It is not advisable, for this reason, to put a rigid limit upon the cost of such a search as a one hour search may not uncover anything of value while a two or three hour search or longer may bring forth such an abundance of prior patents as to more than pay for the extra expense.

What Search May Disclose

The patents found in the search may show:

(1) That the invention is so well known to the public that it is advisable to abandon the idea and avoid further expense in constructing a model or making detail drawings or in applying for a patent. Or,

(2) They may suggest modifications of the original idea so as to avoid objections to prior devices which have been patented, or to avoid infringement of prior patents. Or

(3) They may suggest how the original idea may be more cheaply embodied in a model or operative device. Even in cases where they are of no tangible value to the inventor, they are usually a valuable assistance to the attorney in preparing the specification and claims for the patent application, because unless the invention is of an unusual type the patents found in the preliminary search will show something in the nature of an attempted solution of the inventor's problem and the application and claims will have to be worded in a way to distinguish these from the present attempt to solve the problem.

Filing Patent Application

If the result of the search does not indicate that the idea or invention is to be abandoned, the next step is to file application for a patent. This step has to do with both the question of protection and profit for the invention and should be very thoroly and carefully taken.

As the value of the patent depends largely upon the skill with which the specification and drawing, and especially the claims are prepared, it is advisable to secure a reputable and skilled patent solicitor or attorney to prepare and prosecute the application, and to be prepared to pay him an amount sufficient to command good work.

Claim Sometimes Easy to Get

It is possible, where there is any appreciable novelty in the invention, to secure a patent without expending a great amount of time or thought upon the preparation and prosecution of the application, but such a patent is often not worth the paper it is printed upon because the claims are so limited to unnecessary details of construction that any clever mechanic can design an apparatus to accomplish the same result without infringing any of the claims of the patent, and hence the patent gives the invention to the public, but does not secure to the inventor the protection he desires.

It is this fact that often explains the wide discrepancy between the fees of different attorneys for prosecuting the same type of application—each of them may secure a patent—but one patent may be substantially valueless, while the other, which was matured from a carefully and skillfully prosecuted application may secure to the inventor all the protection to which he is entitled.

Make Drawing and Explanation Clear

The drawing of the application should clearly show and the specification should clearly describe the invention. To this end the inventor should cooperate with the attorney by supplying all the details of the invention necessary to convey a clear understanding of the same which will enable persons skilled in the art to which the invention pertains to make, use or construct the same, and should see that all the necessary details are written into the specification before he signs it. However, the inventor as well as the attorney should be on the alert to avoid undue limitation of the invention by unnecessary details in the specification or claims. The inventor should be quick to perceive various ways in which the result he seeks may be obtained and should insist that the specification and claims be drawn broadly enough to cover various modifications of the invention which could be utilized to obtain these results. The claims should define the invention so as to distinguish it from what is already known in the art and should be broad enough to protect the basic idea behind the invention from various possible forms of securing the same result. If the invention resides in a detailed improvement in some part of an old machine the claims should be drawn to protect the detailed idea and if the invention resides in a new principle or mode of operation, of which the means shown is only one of several ways by which the principle can be carried out, the specification should describe the one means clearly, but the claims should be worded broadly enough to protect the basic principle or mode of operation discovered by the inventor regardless of the specific means used for carrying out the same. For example: assume the inventor to have been the first to provide a demountable rim for vehicle wheels. The claim might be drawn:

> "A vehicle wheel comprising a felly, a demountable rim and means removably to secure the rim upon the felly."

Such a claim clearly would be infringed by the use of any type of vehicle wheel having a felly, a demountable rim and any type of means for removably securing the rim upon the felly.

The claim might also be drawn:

> "A vehicle wheel comprising a hub, spokes and felly, a demountable rim provided with a plurality of V-shaped projections on its inner surface, a plurality of cooperating V-shaped recesses on the surface of the felly to prevent the rim from turning relative to the felly, a ridge on the back of the felly, bolts passing thru the felly, nuts on the end of the bolts and wedge members held upon the bolts by the nuts and projecting over the edge of the rim to hold the rim upon the felly."

A claim of this type could be secured with much less effort than the first type, but it would not be infringed for instance, by a disk wheel, as such a wheel does not have spokes as called for in the claim. Neither would it be infringed by a demountable rim with square or round projections, because the claim calls for V-shaped projections. Nor would it be infringed by the use of any means other than bolts passing thru the felly and nuts and wedge members on the end of the bolts to secure the rim upon the felly.

Difference Between Claims

The one claim would protect the invention against infringement, by almost any conceivable type of demountable rim. The other gives the inventor a patent, but protects only the specific type of demountable rim described in the claim.

When the application is filed in the Patent Office, it is numbered and dated and assigned to the examining division to which the subject matter of the application more clearly relates. Here it undergoes an examination in its regular turn to ascertain whether the specification is in proper form, whether the invention is clearly described and has utility and whether it is novel. The first part of the examination consists in the reading of the petition, specification and oath by an examiner skilled in the art to which the invention pertains and the noting of criticism to the same, which is later corrected by filing amendments to the specification to make the changes necessary to put it in proper form. The examination as to novelty consists of a search, which is supposed to extend thru all the pertinent United States and foreign patents and thru prior publications. These searches were formerly very thoro, but now, due to the press of work and the limited number of examiners allowed for making them, they do not ordinarily include a search thru the literature and may not cover all the pertinent prior patents.

First Claims Usually Rejected

The first official action on the application (which now is from six to ten months after it is filed) is usually a rejection of part or all of the claims. To the inexperienced inventor this is often a sad disappointment, as he naturally feels that it is the final judgment of the Patent Office and that he will not be granted his patent. Fortunately, however, the first rejection is usually not so serious. It may easily be that the attorney in his zeal to secure broad protection for the invention has drawn claims which read upon the prior patents, or perhaps the examiner may perceive the real merit of the invention and cite the nearest reference he can find so that the attorney's argument in overcoming the references will bring out more clearly the real improvements and advancement which the inventor has made over the prior patents.

Next Step After Rejection

In any case the next step in the prosecution of the application is to prepare and file an amendment changing the wording of the specification and scope of the claims if necessary, and pointing out wherein this applicant's invention differs from the references found by the examiner. This is followed by another action by the Patent Office, which is usually of a milder tone and in which some of the claims may be allowed if there is any substantial merit in the invention. Following this another amendment by the applicant or his attorney is in order, and so on until the scope of the invention or rather the breadth of claims thereto is agreed upon by the applicant and the Patent Office, after which the patent is granted.

Can Appeal Examiner's Decision

This is the ordinary procedure where the application has comparatively smooth sailing. In case the application is finally rejected by the examiner, appeal from his decision may be taken thru an elaborate system of appellate tribunals which may complicate the procedure and increase the expense of obtaining the patent. Then, too, the application may become involved in an interference which necessitates a trial similar to those in a court of equity, before the proper tribunal of the Patent Office, to determine which of two inventors claiming the same invention was first to make the invention. It is in this connection that the witnessed sketches and description advised at the beginning of this article are of most value, as they give indisputable proof of the date of conception of the invention, which does not depend upon the unsupported testimony of the inventor alone.

Profiting from the Invention

The question of profiting from the invention is one about which no definite rules can be laid down. The patent when granted may be basic, and a pioneer in its field, in which case depending upon the inventor's business ability and initiative, it is fairly easy to interest capital. On the other hand, even tho a patent is granted it may be dominated by earlier unexpired patents in the same field, in which case it will be necessary to make suitable arrangements with the owners of the prior patents if you are to avoid infringement thereof.

The question of granting licenses on a royalty basis or of an outright sale of the invention depends largely upon the restraints thrown around the patent by the other patents in the same field as is illustrated by the following concrete examples:

Advantage of Royalty

A man engaged in card lettering work, used a lettering pen of one of the large manufacturers of drawing materials. He conceived what to him was a simple improvement in this pen, and sent a sketch of it to the company, saying they could use it gratis if they thought it worth while. The next mail brought an offer of a small sum of money to this man if he would consent to an application for a patent upon the improvement and assign the same to the company, which he did. Subsequent investigation showed that the original patent on this pen expired just a month after the improvement patent was granted and that this simple improvement had extended the monopoly on that pen for another 17 years. It was also found that about 300,000 of these pens were sold annually in the United States for an average price of $1.35. A royalty of only one cent on each pen would have given this inventor an income of $3,000 per year for the life of the patent without effort on his part.

Failure Meets Second Attempt

Spurred onward by this event the same man invented another pen and took out a patent on it. This pen had many advantages over other pens on the market and looked like a "world beater," but many attempts to sell the invention on any sort of a basis failed. It was found that this pen, if manufactured, would be an infringement of an earlier patent under which no pens had been manufactured, but which had about seven years to run, so that no one felt justified in putting money in this patent. The only thing the inventor could do was to sell this patent to the owners of the dominating patent at substantially their own terms or to pay them for a license under which he could manufacture and sell his own pen.

Inventions of Employes

The preceding portion of this article deals with the procedure in cases where the invention is independent of any rights which the company employing the inventor may have, and in which the invention is conceived and perfected by the inventor on his own time and at his own expense.

It often happens, however, that the employe of a manufacturing concern will make an invention relating to improvements in his employer's machines or process of manufacture, during the course of his employment, and this invention will be perfected on the employer's time and by using the employer's materials.

Who Owns Employe's Invention?

In this event the question often arises as to whom the patent right belongs. Many employers require a contract that the employe will assign the patents for all inventions he makes relating to the employer's line of business, to the employer, in which case there can be no question as to whom the patent rights belong.

In cases where there is no contract, however, I am told that the law is pretty well settled that the patent rights belong to the employe who makes the invention but that the employer is entitled to the right to use the invention in his plant.

In other words, the patent is granted to the employe and he may receive any revenues which are realized from the licensing or sale of the invention to others, but cannot prohibit his employer from using the invention in the employer's business.

Sources of Capital

The financing of an invention, either new or an improvement in the art, is perhaps the most difficult type of financing. Capital is very hesitant about putting money into untried things. It is justified in this position since the development and the placing on the market of an untried product has many hazards. For this reason the engineer's report assumes large importance and the business instincts of the engineer must be given full weight.

Engineer's Report

The economical survey by the engineer and the patent investigation are the principal sections of the engineer's report.

The usual sources of capital are closed to this type of financing and the engineer's report will be indicative of the field to be selected.

Where to Get Capital

1. If the engineer's report shows that the patent protection is good and that the article is an improvement in a specific art, it is usually preferable to approach manufacturers who are already making the line of products in a similar field and work out some relationship with them, not only for the manufacture but also for the distribution of the product. Unless the article has an almost universal demand, the inventor should not attempt to interest capital in a new company for the manufacture of the product.

Dangers of Failure

The inventor as a rule is highly imaginative and sees magnified possibilities in his adventure. He has an exaggerated idea as to the value. He is not as a rule a business man nor a manufacturer. He constantly desires to improve his product with the result that he creates an experimental laboratory rather than a manufacturing plant with the result that failure follows failure when this procedure is attempted. Even for a chance of success the development work must be completed. This is usually not the case when an inventor wishes to market his product. The road between the conception of an idea, its laboratory stage and the placing of an article successfully manufactured on the market is a long one. The inventor's part probably does not represent more than from three per cent. to five per cent of the total value. For this reason the inventor is in a much better position if he will place his patent with an established manufacturer on a royalty basis. He should make sure that his contracts are properly drawn and that the people who agree to produce and market his product are responsible.

Sources of Capital

2. If the article is patented and it is shown by the industrial survey that a sufficient market exists or can be developed to justify financing its manufacture and distribution, the sources of capital then are as follows:

a. From people who are familiar with the use of the product.

b. From local people who are familiar with the reputation and solidity of the inventor.

c. From capital which is acquainted with the proposed manufacturing executives.

The responsible industrial banking houses and the private bankers will seldom touch financing of this type. Irresponsible banking houses sometimes do but the cost of the money is always excessive and the inventor may be exploited.

Prospectus

In exploiting a new idea the inventor should procure the services of a promoter of experience who has successfully financed other new things which have been successful. This promoter has by experience learned the dangers and pitfalls and how to avoid them. He also knows sources from which capital can be procured. It may be necessary to have a prospectus carefully drawn which sets forth the cardinal points of the engineer's report, and which would give:

1. A financial plan.
2. The names of the proposed manufacturing organization and selling organization.
3. The responsibility for the proposed earnings.
4. The responsibility for the expected sales and sales organization.

Forming a Stock Company

A stock company is formed with preferred and common stock. In order to be successful, the expected earnings must be large enough to show a very handsome return on both preferred and common and allow these stocks to sell for about 33 1/3 per cent. of their par value with expected earnings on a par basis. The preferred stock should, of course, represent the money put into the business and should have all the protection possible written into the stock certificate and should be first lien on all assets of the company.

* * *

COMMON BRICK PRODUCTION HIGH

The production of common brick during November, according to reports to the Common Brick Manufacturers' Association, from 133 companies, was 163,000,000 brick. The shipments from plants last month was about 145,000,000, indicating that stocks are being accumulated with the expectation of an active demand at the resumption of spring building. A decrease of only eight per cent. in the aggregate orders on the books has been reported during the past 30 days. The districts of the East and Middle West in which the largest building centers are located, have actually experienced an increase in orders. In Chicago, Cleveland, Detroit, New York and Boston, the deliveries of brick are holding up nearly on a par with the mid-building season. The shrinkage in business is confined to the smaller centers, and especially those surrounded by agricultural territories.

* * *

GENERAL BUSINESS OUTLOOK GOOD

The cause of the present feeling of uncertainty in industry which is more or less general, is not due to the fact that business in the United States is not or has not been good, according to the Business Bulletin. During 1923, industry and trade in most lines have exceeded that of 1922. Nor has there been a decided slumping off in business. As most commercial reports point out, business is being well maintained even in industries where a seasonal decline is usual. The outlook in most industries is not unfavorable.

* * *

INCREASED RAILROAD EFFICIENCY

A report of the Bureau of Statistics of the Interstate Commerce Commission shows the more efficient and economical operating accomplishments of the railroads this year, compared with a year ago. The report, just compiled from figures supplied by 175 Class I railroads, deals with September of last year and this year.

The car miles per car day, which is the average number of miles moved by every freight car in the country, was 29.2 miles this year, compared with 24 miles last year. The net tonnage per loaded car, which is the average loading of all cars, was 27.4 tons, compared with 27.3 a year ago.

The number of cars per train increased from an average of 38.2 to 41.2, while the average speed increased from 10.5 miles an hour to 11.1.

WILL GIVE OLD COPIES OF BRICK AND CLAY RECORD

W. G. Worcester, Professor of Ceramics at the University of Saskatchewan, Saskatoon, Sask., has written to Brick and Clay Record stating that he has extra copies of the following back numbers of Brick and Clay Record: February 1896; June 1, 1902; March 1905; January 1, 1906; November 7, December 5 and 19, 1916; January 2, 1917.

Professor Worcester offers these copies to anyone desiring them, especially the ceramic schools who are keeping a complete file of Brick and Clay Record. In return for this courtesy, Professor Worcester would like to know whether anyone has copies of the following issues with which he would care to part. January, February, March and April issue of 1921; April and June 1901; May 1902; January, June and July 1903; August, September and December 1904; and July 1905.

If any reader has any of these copies on hand and would like to give them to Professor Worcester, Brick and Clay Record will be very glad to receive them.

AN "OWN YOUR HOME" PLAN THAT WORKS

One of the finest plans for the promotion of the "Own Your Own Home" idea that has ever reached Brick and Clay Record is being promoted by the Gardner (Mass.) Chamber of Commerce. The business men of Gardner, Mass., have joined in a plan which makes it possible for any man to finance the building of his home, providing he has at least ten per cent. in cash of the amount required to build his home. The plan is so simple and has apparently worked out so well that it is worthy of the attention of all men interested in the home building movement.

The following letter from Tudor W. Bradley, manager of the Gardner Chamber of Commerce, explains the idea very fully:

"We have a signed agreement by the business men of Gardner each with the liability limited to $1,000, which is not binding upon the heirs or estate of the signer.

"102 men of the community signed the agreement, making it possible for the Indorsement Committee to go on paper up to $102,000.

"The plan works out as follows: The man wishing to build a $5,000 house must have at least ten per cent. ($500) to invest in the home himself. The savings bank, under the Massachusetts law, can loan a maximum of 60 per cent. of the proposed value, which would mean $3,000, on a first mortgage from this source. The $1,500 necessary completely to handle the transaction is then borrowed on a personal note given by the home purchaser and indorsed by our committee to some bank. A second mortgage is given by the home purchaser to the Indorsing Committee for their protection.

"Payments are required on the second mortgage, to be made monthly direct to the bank. These payments are so arranged that the second mortgage will be paid off in from five to nine years.

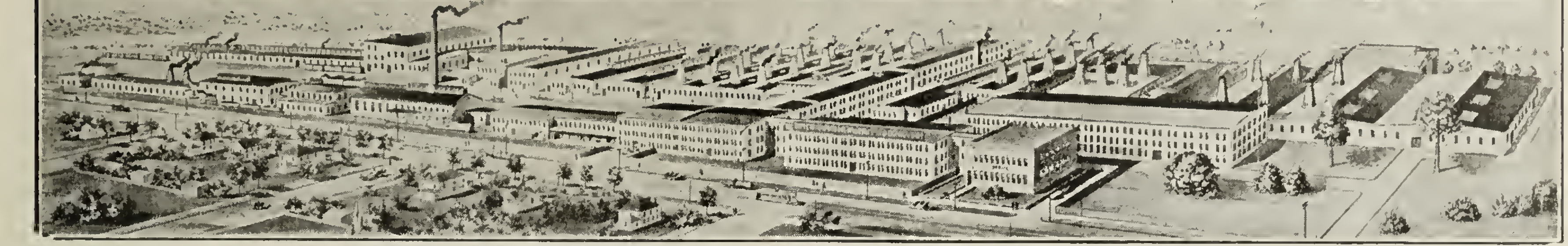
"We have not as yet sustained any losses under this agreement and every payment has been made when due. We find that the moral encouragement given to those who desire to own a home has been one of the greatest benefits of our plan, because many individuals would like to own homes but are doubtful of having a sufficient amount of money with which to complete them.

"We believe that by encouraging people to own their own homes and having a plan by which we can assist them, we have been responsible for one of the biggest building booms this community has ever seen.

"Our housing indorsement plan has had the attention of the housing chief of the Department of Commerce."

To the man with a small amount of cash available, the second mortgage has always been the rock upon which his ambitions to own a home have shattered. The second mortgage is taken care of very nicely in the Gardner Chamber of Commerce plan and at an interest charge which is entirely reasonable.

FINE CERAMIC MANUFACTURE



A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

FROM PRESSING TO CASTING

WHEN THE PRESSERS employed in the sanitary pottery field voted to strike a year ago, they did not reckon with the resourcefulness of the manufacturers. In a few instances it can be found that casting this type of ware was being done before the strike went into effect, but the majority of this ware was being made by the pressing method.

Changing from a familiar process—pressing—to one that has not had much attention—casting—is indeed an adventurous undertaking, but George E. Rhodes, vice-president, and Carson Herrell, secretary and treasurer, of the Kokomo (Ind.) Sanitary Pottery Co., read the handwriting of progress on the wall and began experimenting, with excellent results, a long time ago. When the time came to change, therefore, they were prepared in fundamentals to make the transition.

Develop Casting Slip

One of the first things that was necessary to find was a body that would cast. Then the proper consistency for casting had to be determined. This important information was gained by mixing trial batches in a blunger having a capacity of 300 pounds. It was found that a double blunging and agitating system produced a more homogeneous body with a resultant reduction in culled ware. By using several different varieties of flint and spar a stronger body, as well as one that suffered very little dunting, was produced. It happens rarely that a dunted piece is found.

Considerable time was used in experimenting with casting in order to obtain the necessary thickness for the ware. This thickness was found to be three-quarters of an inch in the green. In instances where the mold has a core this core is pulled after 2¼ hours. By this time the piece is sufficiently cast so that the walls will remain rigid. The piece is allowed to remain in the mold until morning before being released. It is then placed on the drying racks where, with the aid of steam pipes running underneath, the green ware dries in ten days and shrinks to one-half inch in thickness. The amount of cracked ware due to drying strains is so small that it can be considered negligible. In the Spring and Winter, due to the relatively low humidity, the ware takes longer to dry, but no other difference in the behavior of the product is noticed.

This Potter Is Finishing a Reverse Trap Washdown

Making Saggers

The ware is ready for the bisque after it has been thoroly dried to a bone dry condition. It may be well at this point to say something about the saggers in which the ware is burned. The mix used for these fire clay and grog boxes contains 50 per cent. grog (ground in a dry pan thru a one-eighth inch grid), a cheap grade of fire clay and two sagger clays. The method of preparing the sagger clay is as follows: After the clay part of the batch is weighed up and mixed a layer of dry clay is spread on the floor of the soaking pit and then a layer of grog is spread over the clay and the whole thoroly wetted. This procedure continues until the entire batch has been used. The mass is not aged but it is pugged twice. It was said the second pugging increased the plasticity of the mass and by giving a greater degree of homogeneity added to the strength and life of the saggers.

With the Aid of the Unloader Shown Here, Coal Is Unloaded at About 12 Cents a Ton

After the mix has been thoroly pugged it is placed in a room conveniently located so that the sagger makers lose no time in obtaining material for their work. A sagger maker and helper will turn out 100 washdown saggers in ten hours. These saggers are set on shelves and are aided in drying by pipes carrying live steam that run along the floor below the shelves on which the saggers are placed. When bone dry the saggers are burned in the bisque kiln and are then set as caps on the bungs.

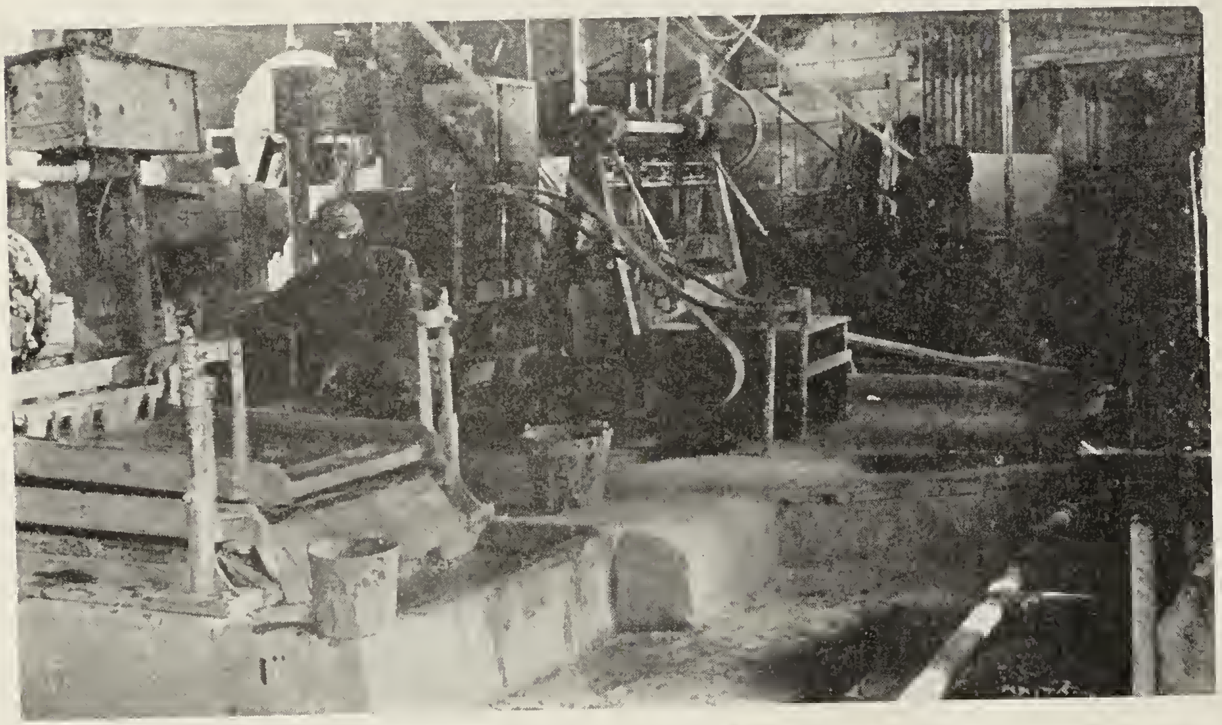
The ware is burned in nine 16 foot,

The Raw Ball Clay Is Stored Exposed to the Weather. This Weathering Breaks the Clay Down So That It Will Blunge More Easily

up-draft, coal fired kilns. Four are glost, having a capacity of 440 pieces each, and five are bisque, having a capacity of 375 pieces each. The saggers in both burns are wadded with the sagger mix except that the grog is replaced by sand. Pyrometer and cones guide the fireman to burn an even Cone 9 in the bisque in 48 hours. Immediately upon the finish of the burn the fires are drawn and the doors of the fire boxes mudded up. The damper is allowed to remain slightly open and natural cooling takes place.

After the bisque burn the ware is carefully inspected and cleaned, after which it is glazed with a fritted glaze, dried on racks that are located in the workroom and set in glazed saggers. The glaze-washed saggers prevent any glaze being stolen from the ware. The glost burn reaches Cone 6 and is completed in 48 hours.

This firm is making 300 finished pieces a day, of which 125 are washdowns. One of their feature products is the cleverly made "Kokomo" reverse trap.



A Triple Blunging and Agitating System Imparts Desirable Working Properties to the Body

The coal for the kilns is unloaded by a mechanical unloader that distributes the fuel outside of the kiln shed so that the firemen can reach it with greatest facility. It costs the company 12 cents per ton for unloading the fuel. Many additional improvements are contemplated by the officials of this company.

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CONVEYORS NOW HANDLE BRITISH CLAY

Belt conveyors for handling china clay and loading it into steamers are a feature of a new pier at Fowey, on the south coast of England, which is an important shipping port for this material. In 1922 more than 600,000 tons of clay were shipped, largely to the United States. The pier or jetty extends at a sharp angle from the river bank, so that it has a berth 300 feet long on one side only. Steel cylinders sunk to rock and filled with concrete support a frame of steel girders having brick arches between them and a concrete deck 50 feet wide. Freight cars of 10 and 12 tons capacity, having the ends hinged at top, are run upon a tilting table at the shore end of the pier and dump the clay into a circular chamber 34½ feet in inside diameter and 23 feet deep. As this chamber, supported on foundation cylinders, extends below the water, it is made with a 33 inch concrete wall between two steel shells.

Before a Mixture Is Placed in Production a Trial Batch Is Blunged

A hopper in this chamber feeds the clay upon an inclined conveyor belt traveling at 125 feet per minute and rising to a height of 35 feet above the pier. At the top, the clay is delivered by a transverse belt to a horizontal belt extending the full length of the pier. This belt serves a loading tower which travels along the berth side of the pier and has an inclined adjustable chute to deliver the clay into the ship's hatches. A revolving shoe or spout at the end of the chute spreads the falling clay and reduces the amount of hand trimming of the cargo in the hold. The conveyor galleries and the tower provide for duplicate equipment of belts and chutes when required. To handle clay shipped in barrels and sacks there is a three ton revolving crane traversing the top of a gantry travelling on the berth side of the pier and between the shipping tower and outer end of pier. Storage for 20 cars is provided on a side track and the cars moved to and from the pier by cables and capstans. The dumping table, conveyors, tower, crane and capstans are all electrically operated. This shipping plant was designed under the direction of W. W. Grierson, chief engineer of the Great Western Ry., and was built by the Cleveland Bridge & Engineering Co.

⁂

CREDIT ASSOCIATION IS DISSOLVED

In the final decree ordering the dissolution of the Tile Manufacturers' Credit Association entered in the Columbus federal court, the 13 member industries of the body were specifically restrained by the United States department of justice from "in any way making or exchanging reports as to prices, sales and orders."

Injunction proceedings against the association were brought in January, 1922, by Attorney General Daugherty, his petition charging that it was organized primarily for the purpose of establishing and maintaining uniform prices. The members are described as the largest floor and wall tile manufacturers in the country.

The dissolution decree directs the manufacturers to transmit to the federal agents any information on production, stocks, prices and other data required at any time. They may not organize except for such purposes as advertising, study of trade problems and standardization of products, the decree adds.

⁂

INDIANA KAOLIN COMPANY FORMED

The Huron (Ind.) Kaolin & Clay Co. has been incorporated recently and is issuing 600 shares of stock at no par value. Fred Kixmiller, Lloyd Cheek and Fred B. Jones are named as directors.

BUSH CHINA TO MANUFACTURE SOON

Bush English China Co., Ltd., Port Hope, Ont., has secured a building and will manufacture tableware pottery. The officers are as follows: president, H. T. Bush; general manager, C. Jackson. Other directors are Thos. H. Sant, East Liverpool, Ohio; L. J. S. Myers, Toronto, and W. R. Fleming, Toronto.

WILL SPEND $75,000 ON IMPROVEMENTS

The Florida China Clay Co., Leesburg, Fla., will spend over $75,000 in enlarging and modernizing its plant south of the city. A large power house is under construction on the new spur built by the Atlantic Coast line railroad on the branch line to Yelaba. An electric power plant of 600 horse power, in two units of 300 horse power each, will replace the six boilers now in use. All trucks for conveying the pressed clay to the drying room will be replaced by a motor driven belting system. Three new pumps for removal of overburden and for mining the clay have been purchased and are being set up. When the improvements have been finished the company, which now employs 75 men, will more than double this number. L. A. Morris, who for more than 20 years was connected with the Georgia Kaolin Co., has accepted the position of joint manager of the plant.

The present capacity of the plant is from 50 to 60 tons of refined clay per day, but this will be increased to 175 tons a day when the improvements have been made and the new machinery installed.

ATLANTIC DECLARES DIVIDEND

A quarterly dividend of $2 on the preferred stock, payable December 15 to stock of record December 5 has been declared by the Atlantic Terra Cotta Co., of New York. $1 quarterly was the previous rate. The stock is a 7 per cent. cumulative issue. This company operates four plants on the Atlantic seaboard.

Good Talks at Potters' Annual Meeting

THE 45TH ANNUAL MEETING of the U. S. Potters' Association held December 4, 5 and 6 at the New Willard Hotel, Washington, D. C., proved in every way to be a most successful session. An excellent program rewarded the members who journeyed to the Capitol city.

The address of President George C. Mitchell contained a general review of economic conditions thruout the industry. President Mitchell also gave out suggestions which, if followed, would assist the industry materially. He also touched upon transportation facilities to be of mutual interest to both manufacturers and customers. Much credit was given the Special Committee which was charged to equip what are now the luxurious quarters of the association at East Liverpool, Ohio. As a final word Mr. Mitchell urged the members to improve the quality of their product as well as their service.

Production Costs Increased 100 Per Cent.

W. E. Wells of the Homer Laughlin China Co., East Liverpool, Ohio, in his report of the Labor Committee dwelt upon the prominent issues of the industry. He stated that the potter is able to earn wages that compare favorably with the highest that can be earned in other industries, and are well above the average. The total cost, he states, of producing a kiln of ware has increased 100 per cent. since 1913. Mr. Wells was loud in his praise over the results of the Fordney-McCumber tariff on china and earthenware. The substantial growth in business was due, he said, to the fact that the housewife is demanding American made dishes. Mr. Wells thought that the considerable damage suffered by the ware in the dipping, kiln drawing and kiln placing might be due to the piece-work system.

Frank P. Judge, Jr., of the National China Co., Salineville, Ohio, gave a detailed report of the Manufacturers' Cost Committee. If we are to conduct our business profitably, said Mr. Judge, we must know what it is costing to produce our particular products. With this information our selling prices can be determined so that they will net us a fair return on our investment. Comparisons can be made if cost finding methods are uniform, differences can be analyzed and intelligently discussed, costs can be reduced by elimination of waste and inefficient methods of production. The cost system should be made to fit the existing conditions in a plant. Eleven potteries are known to have installed cost systems following a plan that is in the nature of a continuous cost service, and is installed and operated at a cost less than the salary of one cost clerk.

Compares Old Pottery with New

Charles F. Goodwin, secretary of the association drew a comparison between the old pottery plants and the latest addition to the East Liverpool district, that of Plant No. 6 of the Homer Laughlin China Co., at Newell, W. Va. Mr. Goodwin stated that the first pottery in East Liverpool was started with a capital of $80.

The Membership Committee reported that three active members have been admitted into the association.

Dr. Charles W. Gustenberg, Prof. of Economics, Accounts and Finance at New York University, in an address sparkling with metaphors and apt phrases stated that the tremendous building operations would continue in 1924 and that the general trend of prices during the next 30 years would be downward. He warned all manufacturers and business men to prepare in times of prosperity for times of depression.

Freights Remain Constant

In presenting the report of the Transportation Committee, Fred B. Lawrence of the Homer Laughlin China Co., Newell, W. Va., said that some of the freight problems as referred to Pacific Coast shipments were near solution. Records and data show that this committee aided to reduce the shipping rates in a number of cases. An interesting development is the pool car arrangement whereby a forwarding company has on its own initiative sent into the East Liverpool district and arranged for the pooling of less than carload shipments to New York and Chicago. Very little change has been made in the freight charges on raw materials.

Among other reports on the program were those of the Kiln and Fuel Committee, Machinery Committee and Research Committee. Dr. Burgess, Director of the Bureau of Standards made a short address. After the meeting had adjourned the members were taken on a tour thru the Ceramic division of the U. S. Bureau of Standards. This inspection evoked considerable comment on the various ceramic investigations undertaken by the bureau.

* * *

Some of the papers presented at the sessions of the U. S. Potters' Association meeting will probably be printed in future issues of Brick and Clay Record.

PRODUCERS

Here is "Producer and Saver" No. 384 of The American Line. It is fully covered by patents and when you install it you get protection as well as "production."

The American No. 384 Grinder is "Producing" 400 tons of Hard Shale ground for the Pug Mill in a day. This is the record of the Salt Lake Pressed Brick Co., Salt Lake, Utah.

When it comes to saving, J. B. Cohoon, Manager, says: "We have eliminated ten men. It easily does the work of four nine foot pans on one-fourth the power. We save a lot of grief and in a year have needed no repairs."

Truly this *is* a "Producer and Saver."

The Salt Lake experience is only one of a number. We will be pleased to give you any information you may desire on this "Producer and Saver." It can't help but pay for itself in your plant if you use two or more pans.

The American No. 384 Grinder is in a class by itself.

Write us regarding this or any of our long line of "Producers and Savers" for Clay Plants.

The Hadfield-Penfield Steel Co., Bucyrus, Ohio

Builders of "The American Line"

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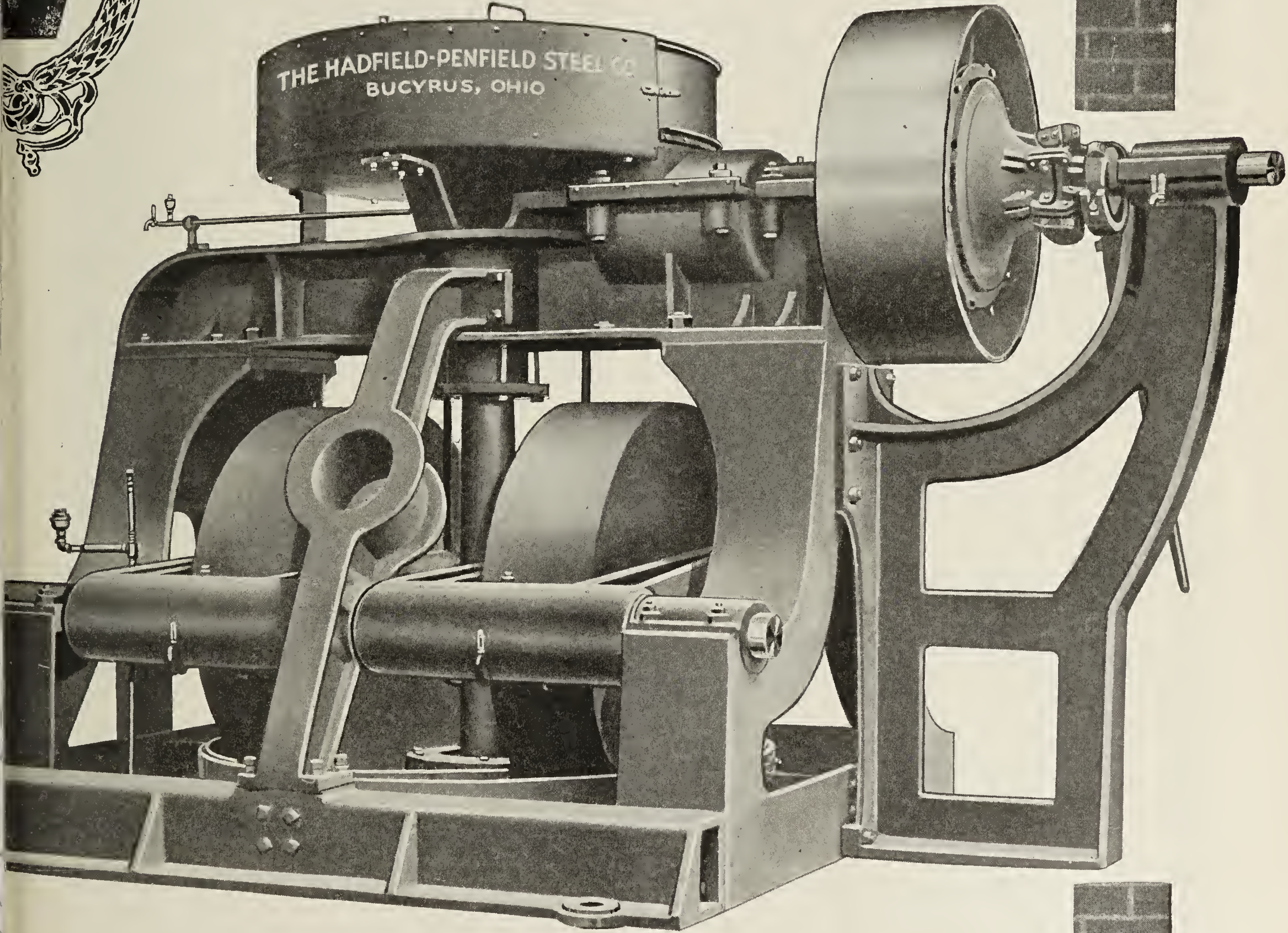

Producer and Saver No. 384 (Patented)

An Ironton Locomotive At Work In A Stone Quarry

STORAGE BATTERY LOCOMOTIVES under certain conditions have very important advantages over all other forms of haulage. A careful survey by our engineers will determine whether these conditions exist in your work—and Ironton's will not be recommended unless they fit. Such a survey places you under no obligation whatever.

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THE IRONTON
STORAGE BATTERY LOCOMOTIVE

A Cure for One of the Worst of Dry Pan Troubles

Our Dry Pan Accelerator when placed in any make of dry pan will increase its capacity 25 to 40 per cent when wet or damp material is being used. When the material is dry the Accelerator will increase its capacity about 20 per cent.

The Accelerator is a simple but wonderfully efficient device, so working that it keeps the grates or screens clean and open, regardless of dampness of the material being used, and effectually prevents either dry or damp material from collecting on the outer surface of the grates next the rim. This coating beginning at the largest place of the screening surface reduces the capacity so much that by preventing this coating the Accelerator will often pay for itself in one day's run.

Full information: Description, price and terms furnished on application

Dry Pan Accelerator Company
Carthage, Illinois

The Letter Box

A Place Wherein Letters That Have General Interest Are Published and Commented Upon

BURN BIG 35 POUND SHAPES IN 36 HOURS

In a letter to Brick and Clay Record, Leonard Steinecker, of Medellin, Colombia, gives some interesting data regarding the brick manufactured there. He states the size of the brick there is enormous, measuring about 15½"x7½"x4¼". It takes about seven American brick to make one of their brick.

"The length of time required to dry brick," Mr. Steinecker says, "is about two months. There are three round down-draft kilns, but only one in operation. There formerly were two brick plants equipped with machinery, but one of them has been scrapped and the other one is not in operation. Can a large brick of the size mentioned be made on auger presses? In the green this brick probably weighs 35 pounds. Lime and cement cost three times as much as in the United States. The brick are all hand made and are cut straight and to size before they are put in the pile. Wood is still used for burning in some places here. The brick are set on arches with the fire below the arches. In the up-draft open kilns coal is burned on self-made brick grates. The grates are a few inches lower than the floor and the brick are corbeled out over the fire bed. The time of burn is 36 hours and a regular burn is 95 per cent. good. 1½ tons of coal are required for a thousand brick making a cost of $12 per thousand. Price of brick delivered is about $70. The brick resist the fire well and never melt down.

"The roofing tiles are of the old Spanish type, made on the floor by withdrawing the mold. The clay must be stiff but plastic enough to prevent the tile from collapsing. When these tile, which are curved are burned and dry, they show enormous strength—a man can stand with a foot on either edge and they will not break. A practical hand press to make modern Spanish tile would mean a great progress as the old style is too heavy. The same machine might also serve to press the floor tile, which would increase their strength and improve their appearance.

"Sewer pipes are made by the throwing method. They are comparatively short as they will not stand up with soft clay and with the stiffer clay they will show imperfections. It will take a long time before this method is replaced by a better one, as it is cheap. There is no vitrified brick made nor any salt glazing done as salt is too expensive. The surface of floor tiles could be improved with a clay slip if there were experienced men.

"No one has a production great enough for a continuous kiln. Why are there not more used in the United States? In Europe, especially in Germany, Sweden and Norway, there are hardly any other kilns in use. These giant fire resisting brick are burned in open kilns with no chimney, without damage and with ten per cent. fuel in the short time of 36 hours while in the United States with their small brick and all possible improvements manufacturers require 120 hours for burning."

* * *

ADVICE FOR HUDSON RIVER MANUFACTURER

Robert W. Jones, of Catskill, N. Y., has been an interested follower of the articles on the Hudson River brick situation appearing in Brick and Clay Record recently. Out of his experience he volunteers the following interesting opinion about the Hudson River conditions:

"Anything in regard to Hudson River brick production is of interest to me. I believe I am fairly well acquainted with conditions in this district. I have talked with owners of brick plants, with foremen and laborers and, no matter how good the times are, they are all looking for something to drop. What your article, '1924 Prospects for Hudson River,' says in regard to the fact that the small plant will always be able to compete is true just as long as the sand supply lasts. Sand is going to be a scarce article in the Hudson valley soon. It is going to hit most of the small plants and a few of the large plants. When the time comes that the cost of sand is too great for the economical operation of the small plants they will have to close or take advantage of other materials that will allow them to operate but with a product quite different from the present common brick.

"In my opinion the brick producer would be a lot better off if he would quit trying to get relief from Congress in the form of a protective duty against German brick, but rather spend a little time trying to get some assistance towards finding just exactly what he can make from the Hudson river clays and what are the most economical methods of production.

"Did you ever hear of any money being spent to investigate the possibilities of the Hudson Valley clays? I never did and I have been in a position to know. There has been much money spent on such problems in New York, but it has been mostly along a line not connected with any economic work. There has been only one publication by the State Geological Survey on the clays of the State. That was made at the time of the Pan-American Exposition at Buffalo. There has never been made a real investigation as to the possibilities of the clays of this State."

Questions and Answers

Best Authorities in Every Clay Working Branch Are Called Into Consultation—Their Advice Is Free to You, Thru These Columns

Address all communications intended for this department to "Editor Questions and Answers, care of Brick and Clay Record," Chicago

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BLISTERS ON SEWER PIPE

1,078. *Michigan.—We are having trouble and would like to get some information and help if possible.*

We make a very high grade, salt glazed, fire clay block—both silo and building tile. Our ware burns to a light brown color. Our clay is a fire clay, very plastic and lies under a seam of coal; that is, we strip off about 25 feet of overburden, under which is about three feet of coal and under the coal about eight to ten feet of fire clay. Our ware is burned in down-draft kilns which are equipped with electric pyrometers. We burn it off at about 2,100 deg. F.

The main trouble we have is that the top row or two of block in the kiln are covered with blisters. These blisters show up when the ware comes thru the dryer also. They become considerably enlarged during the burning, especially on the top two courses.

We would appreciate it very much if we could get some information as to what our trouble is, whether it is the die construction, lack of pugging or whether it is necessary to mix something in with our clay. We have no trouble other than the blistering. It does not always blister, but in most cases we have a great deal of blistered ware at the top of the kilns.

The above problem was submitted to H. G. Schurecht, Industrial Fellow for the Sewer Pipe Manufacturers Association at the Mellon Institute of Industrial Research, University of Pittsburgh, Pittsburgh, Pa., who replied as follows:

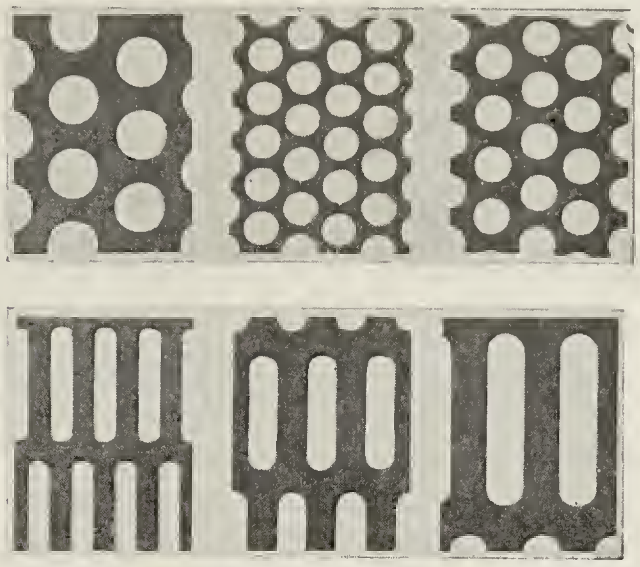
"It seems that this manufacturer is using a clay which because of its extremely fine grained nature is difficult to oxidize. The addition of 5 to 15 per cent. fine sand or ground clay would assist in oxidizing the ware and hence reduce this trouble.

"He may also be firing his ware at too high a temperature. In this case blistered ware due to overburning would be obtained in the top course since this is the hottest portion of a kiln."

Thru the kindness of John J. Starr, treasurer of the Robinson Clay Products Co., Akron, Ohio, a letter was received from their W. H. Rook, production superintendent, who gives the following suggestions:

"To my mind this blistering may be caused by too plastic material which can be overcome to at least a cer-

Perforated Steel Screens



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All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

Sheets furnished flat or rolled to shape for revolving screens.

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Powdered—Granular
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For Prevention of Scum
Thereby Producing
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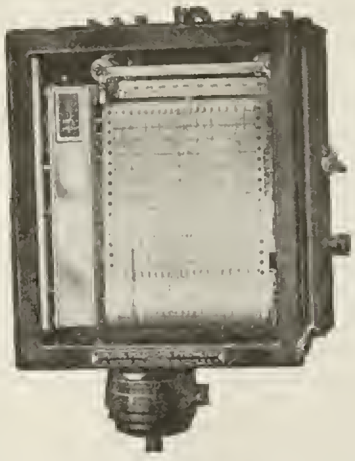

Control The Heat Your Coal Generates

Determine temperatures in all portions of the kiln. Find out where your fuel is being wasted.

Eliminate underburnt and overburnt ware in parts of the kiln by knowledge of temperatures.

Be sure that knowledge is accurate by installing Bristol Pyrometers.

Ask for 68-page catalog AE-1401.

THE BRISTOL COMPANY
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BRISTOL'S

INDICATING RECORDING PYROMETERS

BETTER QUALITY WARE

That is the result when Frost
Dry Pans are put on the job.

THE FROST MFG. CO.
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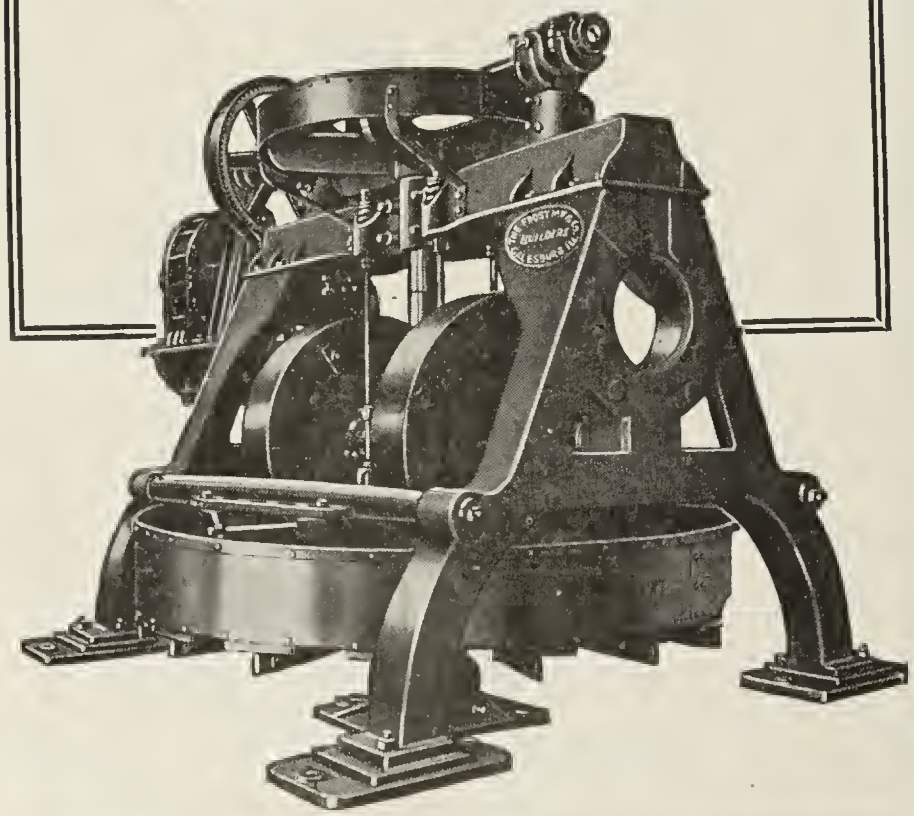

QUALITY ECONOMY SERVICE

tain extent by the addition of sand, or grog. Secondly, it may be due to the die, in that the finish is too long, which could probably be corrected by shortening the finish. The aggravation in the kiln might also possibly be corrected by maintaining more oxidizing conditions in place of reducing conditions which apparently are in effect.

"I think one of the three above causes is the trouble. The remedy is, as I see it, given above."

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BLACK GLAZING ENDS OF FACE BRICK

1,079. *Ohio.—We would like to have the following information: A chemical and an apparatus to coat the ends of rough texture brick to secure a black glazed end. Name of appliance used and method of application.*

This question was referred to Chas. E. Jacquart of the American Enameled Brick & Tile Co., of South River, N. J., and he volunteered the following information:

"In reply to your letter relative to the production of black headers and stretchers in the rough textured face brick industry:

"I am now working with two Ohio firms on this very proposition. I have worked out a coating that I think will do the work and we are now experimenting with the best method to apply the material without prohibitive cost.

"The machine we are using at this plant for spraying is patented by ourselves and it is really too elaborate for the face brick people. I have worked out the problem for one of the local common brick manufacturers but have had very little experience with the Ohio shales.

"The shade and type demanded for this work is a dull sooty black that will not peel or spall in the weather and the fluxing point and the coefficient of expansion and contraction must be properly adjusted to fit the body. It is impossible to give a universal formula that works in every case and each manufacturer will have to work out a mix that will suit his particular type of shale."

⁂

INSTRUMENT TO MEASURE GAS

1,080. *Indiana.—We would highly appreciate any information you can give us as to where we can buy, and the approximate cost of, an instrument registering the amount of gas in a room of kilns should there be a leakage. At times when there is a leakage and the gas from the tunnels blows into a kiln and at the same time the carbon gas from a kiln under fire is also present, a person will acquire a headache. This we believe is caused, not from the carbon gases from the kiln but from the gas used in burning the ware. Therefore, had we an instrument to register coal gas, we would be sure of this fact.*

The best advice that we can give you at this time is to consider the use of a flue gas analysis instrument. This is of the same type of instrument used by combustion engineers for boiler and other investigations that are aiming to reduce the consumption of unnecessary fuel. This instrument consists of a small portable box which will make it handy for your investigation.

With this type of instrument you can take samples of the gas in the kiln at frequent intervals, say one an hour, or if you desire, one every 15 minutes. With this type of equipment only about a minute or a minute and a half is required to show definitely the percentage of carbon monoxide and carbon dioxide in the kiln atmosphere.

This information was obtained from Mr. Murphy of the Joseph W. Hays Corporation at 108 South LaSalle Street, Chicago, which company manufactures the equipment spoken of.

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If you have any problems which are troubling you, consult this department. You may get some good ideas.

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

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WILSON CHAIRMAN OF IMPORTANT COMMITTEE

Ira T. Wilson, of the National Board of Fire Underwriters, has been appointed chairman of Herbert Hoover's committee that is expected to prepare a report on the minimum requirements of masonry walls in buildings larger than those used in small dwellings.

CHRISTENSON WILL GUIDE TEXAS GROUP

Appointment of C. O. Christenson as secretary of the recently organized Texas territorial group of common brick manufacturers has been announced. Mr. Christenson is looked upon as ideal for this post. He is well acquainted in both Cleveland and Detroit circles, is a graduate of the engineering college of the University of Michigan, and is conversant with both the practical and commercial sides of the business. Mr. Christenson is making his temporary headquarters in Cleveland and is expected to leave for Dallas, Tex., his permanent headquarters, about the first of the year.

CHAS. LEONARD, CIVIL WAR VET. DIES

Charles Leonard, who for many years conducted a clay plant at Rahway, N. J., died December 3 at Whitehouse, N. J., aged 78 years. Mr. Leonard was born in Rahway, and served with distinction during the Civil War as a private in the Sixth New York Independent Battery, participating in the Battle of Gettysburg and many other engagements. Besides stoneware and flower pots, the Leonard pottery turned out sewer pipe and drain tile. Mr. Leonard retired from business about ten years ago.

D. S. PAYNE OUT OF HOSPITAL

In September Brick and Clay Record contained a news item regarding the painful accident suffered by D. S. Payne, superintendent of the brick plant at Egg Harbor, N. J. Mr. Payne's friends in the industry will be glad to learn that he is now out of the hospital and has returned to his home in Iola, Kan., to recuperate. Mr. Payne expects to take up his duties at the Egg Harbor plant in a couple of months.

WANTS CLAY MACHINERY

J. K. Clark, of Hamilton, Ala., is in the market for machinery for a small capacity clay brick plant.

WANT MORE DRYING CAPACITY

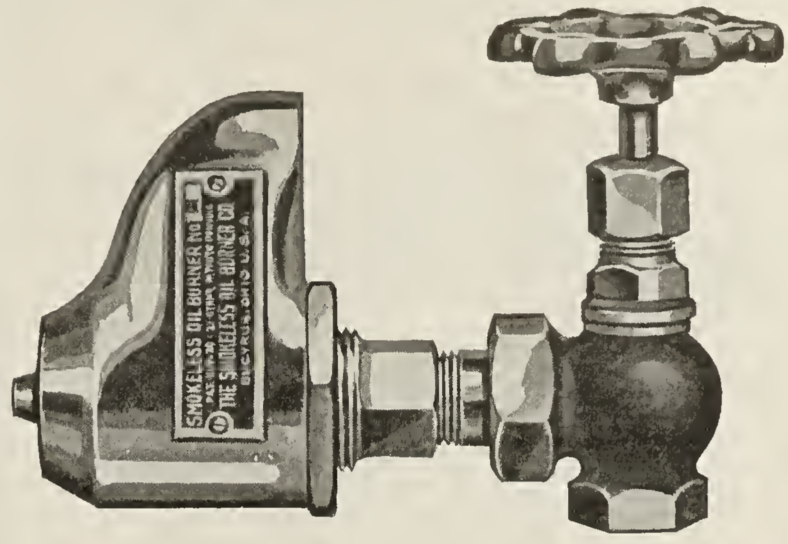
The Gadsden (Ala.) Clay Products Co. contemplates the early construction of additional drying facilities that will serve to increase the present capacity of the plant, officials of the company announced recently.

BIRMINGHAM EXPECTS RECORD BUILDING

Brick and tile manufacturers of the Birmingham, Ala., district are looking for one of the biggest building booms next spring that they have ever experienced. During the month of October there was more building in Birmingham than during any other month of the year.

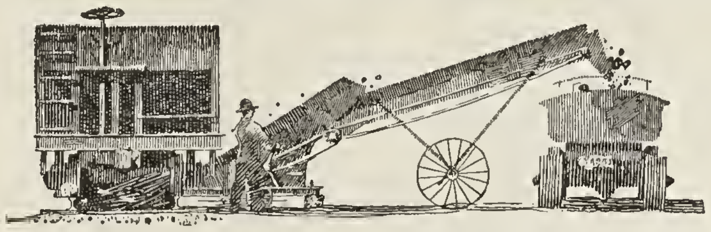
OPENS NEW YORK EXPORT DEPT.

The Alabama Clay Products Co., of Birmingham, Ala., has just announced the opening of an Export Department at 60 Washington Street, New York City. W. A. Spence is in charge of this department, of which great things are expected.



THANKSGIVING is the time to be thankful—not only personally but commercially. The Brick Men who have their Plants equipped with Smokeless Oil Burners have every reason to be thankful, because every kiln that is burned is uniform. There are no varying results. Every burn is a satisfaction—a real genuine reason for THANKSGIVING.

The Smokeless Oil Burner Co.
BUCYRUS, OHIO
Complete Oil Burning Systems



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Capable with ease of a capacity of thirty tons per hour, our equipment will save you labor and demurrage charges. Within a few months' time it will more than pay for itself.

In conjunction with our conveying units, this Unloader will serve your storage pile or bin, regardless of the distance, from your siding.

Send us the details and we will be glad to figure out for you the best way to unload or convey. We have rendered this service to others. Let us do it for you. Write us today.

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In every public building or industrial plant, the installation of modern air handling equipment will increase its profit possibilities. *Your* profits can be increased if you take advantage of American Blower equipment and engineering service along the following lines:

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Bulletins on any of these subjects, embodying the knowledge acquired through forty successful years, will be sent upon request.

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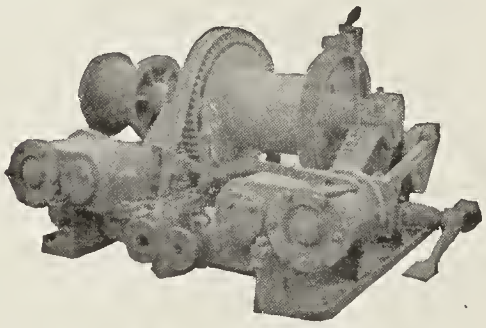
Emerson, Bratingham Hoists
UNUSED
DOUBLE CYLINDER, SINGLE DRUM, IN FIRST CONDITION
$125.00 Each F. O. B. Chicago



Capacity 10,000 Pounds
IMMEDIATE SHIPMENT
Detailed Specifications Furnished on Application
"QUANTITY IS LIMITED"

Hyman-Michaels Co.
531 Peoples Gas Building Chicago, Ill.

We are headquarters for first class relaying steel rails and angle bars

WILL DEVELOP SILICA DEPOSITS

Following a recent survey of conditions at Anniston, Ala., and an investigation of available clay deposits, Hecker Brothers, of Philadelphia, Pa., have acquired a large tract of valuable silica located in the vicinity of Anniston, and will establish a plant at Jacksonville, Ala., nearby, it is said, for the manufacture of brick and other products of silica. The plant will represent an investment of about $100,000, and will probably be completed in time for the starting of operations early next year.

NEW COMPANY IN LOS ANGELES

The Lafayette Tile Co., Los Angeles, Cal., has been incorporated with a capital stock of $20,000, it is reported.

SURVEY CLAY DEPOSITS OF RIVERSIDE

The chamber of commerce of Riverside, Calif., has just completed a second industrial survey, looking toward the establishment of clay products manufacturing in that vicinity. The survey just completed is based on the existence of large clay deposits to be found on the Pacific coast, in Riverside County and surrounding territory. These deposits are said to range from clay suitable for brick and tile manufacturing to the higher grades used in manufacturing pottery.

NEEDS MORE CAPACITY

J. F. Faulstich, manager of the San Luis Obispo (Cal.) Brick Co., states that it will be necessary to increase the capacity of the plant 25 per cent. in order to meet the demands of the trade for next year. He has been in Los Angeles examining machinery for that purpose. The company took over an abandoned yard three years ago, and since that time has made 9,500,000 brick. The local demand has been growing so rapidly that now nearly one-half the output is being consumed at home.

FACE BRICK FOR REPAIR WORK

C. W. Hunt, of 110 Monte Ave., Piedmont, the fashionable residence suburb of Oakland, Cal., has just finished facing his home with a veneer of face brick. The house was faced but nine years ago with stucco on metal lath. But the metal lath corroded, and the stucco cracked and peeled off in large patches. Before having it refaced, he learned that it would cost little more to have it veneered with face brick. So he chose a fine buff tone of Dickey face brick, which produced a beautiful and substantial effect. Says Mr. Hunt, "I figure that the slightly increased cost will be more than counterbalanced by the fact that the veneer will remain intact as long as the house stands, and that it will never need repainting or other repair work."

BUILDING BRICK POPULAR IN COLORADO

Those sections of northern Colorado and southern Wyoming which are served by the Longmont (Colo.) Brick & Tile Co. are reported to be showing an encouraging interest in brick and clay products. The Longmont company has found it necessary to push production of building brick in particular to meet the brisk demand for that article thruout its territory.

NEWINGTON GETS NEW COMPANY

The Connley-Purington Brick Co. has been incorporated at Newington, Conn., with an authorized capital of $50,000, it is reported. The incorporators are John H. Connley of Berlin, Conn., and others.

FORM WHALE BRICK & TILE CO.

The Whale Brick & Tile Co. of Wilmington, Del., has been incorporated with a capital of $20,000.

INCORPORATE FOR HALF MILLION

The Carter County Brick Corp., Wilmington, Del., has been incorporated with a capital of $500,000, a report states.

KLEYMEYER FIGHTING FOR WATERWAYS

H. C. Kleymeyer, of the Standard Brick & Tile Co., Evansville, Ind., recently made a trip to Memphis, where he attended a meeting of the Mississippi Valley Improvement Association, which is fighting for deeper waterways, establishment of barge lines, and so forth. Mr. Kleymeyer has been a staunch advocate of waterways for some years past and has been behind a movement for combination water and rail terminals at Evansville.

NEW FREIGHT RATES FOR TERRE HAUTE

The traffic department of the Chamber of Commerce of Terre Haute, Ind., recently received word that an equalization of freight rates on clay and brick products had been received for Terre Haute manufacturers. Under conditions existing previously, it is said, Terre Haute and surrounding territory was paying $1.85 to East St. Louis, while Danville, Ill., had a combination rate into the southwest of $1.30 to East St. Louis, Ill. The change in the rate was obtained working on the basis that the two cities were equidistant from East St. Louis. This change in rate will, is is expected, open up the southwest market to the local manufacturers.

LEHIGH SEWER PIPE INCORPORATED

The Lehigh Sewer Pipe & Tile Co. has been incorporated in Fort Dodge, Ia., with a capital stock of $800,000, by George W. Avery and others, it is said, to manufacture and sell all kinds of sewer pipe, tile, drain tile, and so forth.

CENTERVILLE PLANT BEING REMODELED

Work has started on the entire remodeling of the brick plant at Centerville, Ia., to be in operation in the spring with a daily capacity of 50,000 brick and the plant itself will be modern. The plant will replace the old Centerville Brick Co. and will produce face brick, hollow block, tile and building brick. The old plant manufactured pressed brick only. The new factory will be operated under the stiff mud method and feature hollow block and face brick. A dryer, 40x100 feet, will be built and several minor buildings are soon to be under course of construction. Officers of the Company are: Frank Payne, president; M. G. Hall, vice-president; D. C. Bradley, treasurer; S. A. Martin, secretary and general manager; John Pabst, plant superintendent.

GENERAL'S KENTUCKY PLANT BURNS

Fire at the plant of the General Refractories Co., at Hitchins, Ky., 15 miles east of Olive Hill, Ky., on November 9, destroyed the machine shops, and one section of the plant was also burned, according to advices from Olive Hill.

FIRE CAUSES $40,000 LOSS

The Kentucky Fire Brick Co.'s commissary and office building at Haldeman, Ky., was entirely destroyed by fire, together with all its contents, recently, a report states. A small grist mill located near the commissary was also destroyed. The loss is estimated at $40,000.

CONSIDER BUILDING MORE KILNS

The Owensboro (Ky.) Clay Products Co., which has installed a hollow ware plant, has been so busy that the four kilns have been crowded, and if business continues as it has been the company may consider enlargement of kiln capacity. This plant is built in a miniature way along the same lines as the model plant at Brazil, Ind.

Substantial Savings
and
Increased Production

result from using Burke Electric Motors and Generators. They operate successfully under the most severe conditions.

Send for list of satisfied users in your industry.

✣ ✣ ✣

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ERIE PENNSYLVANIA
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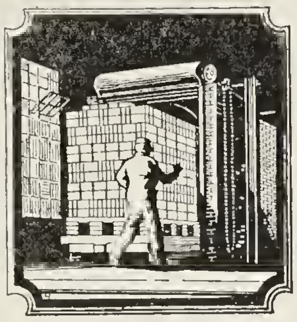
CINCINNATI: UNDERWOOD ELECTRIC CO.
KANSAS CITY: W. T. OSBORN
SAN FRANCISCO: *Coast Equipment Co.*

Blazing The Way To
Decreased Fuel Consumption



The increasing application of the Russell Tunnel Kiln is the most convincing proof of the truth of our claims. Our first installation was made years ago when the belief was current that the periodic down-draft kiln was the peak of efficiency. Since that time labor and fuel costs have risen to exorbitant figures and the saving effected by a tunnel kiln assumes a still larger aspect. Large concerns have become responsive to every suggestion to conserve energy as its scarcity and cost become a more imminent problem.

The Russell Tunnel Kiln is serving the clay industry by greatly decreasing fuel consumption due to continuous operation. A few of the benefits that have followed in the wake of Russell Tunnel Kiln installations are:

(1) Fewer kiln losses because of uniform temperatures.
(2) Decrease in fuel consumption.
(3) Decrease in burning time.

Our Engineers will consult regarding your burning problems at your request

Russell Engineering Company
Boston ST. LOUIS New York

Russell

"We Are Very Well Pleased With the

BAY CITY EXCAVATOR"

Says The Mohawk Brick Company, Mechanicsville, N. Y. "It is inexpensive to operate, doing all the work which we want it to do, and we realize that if this machine had not been installed this spring, we would have had considerable difficulty in digging our clay, owing to the present labor conditions.

"We recommend the machine very highly."

Investigate the time and labor saved. Full details on request.

THE BAY CITY DREDGE WORKS
BAY CITY, MICHIGAN
Eastern Office: 302 Broadway, New York City

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SMOOTH running; correct in design, accurate and true to pitch, Caldwell gears are bound to please you. We make all types—machine-molded, cut tooth, mortise gears, worm gears, etc. Caldwell Promptness is Traditional. It is at your service. Our stocks assure prompt shipment.

Let us figure with you next time you are in the market.

H. W. CALDWELL & SON CO. LINK-BELT COMPANY, OWNER
Dallas, Texas, 709 Main Street—Chicago, 17th Street and Western Ave.
New York, Woolworth Bldg.

CALDWELL

$500,000 FACE BRICK COMPANY

Capitalized at $500,000, the Kentucky Face Brick Corp., Ashland, Ky., recently was incorporated and will erect a plant to be devoted to the manufacture of face brick, load bearing and partition tile. It is understood the company is in the market for equipment. A. L. Russell, 321 Park avenue, Ironton, Ohio, is president of the company, and A. J. Russell, secretary. The company maintains offices in the Second National Bank building, Ashland.

SOME PEPPY ADVERTISING

Capitalizing in an advertising way on an event as it happens is evidently the slogan of the P. Bannon Pipe Co., of Louisville, Ky. Immediately after a fire in a Louisville dance hall had completely destroyed the second floor of the building, the P. Bannon Pipe Co. got out an attractive circular with photographs of the building and with the following punch for hollow tile:

"When the Ha-wi-an Gardens Building burned in May, 1922, the hollow tile floor and partitions built into the second floor by the P. Bannon Pipe Co. prevented the fire, which started on the ground floor, from reaching the dance hall on the second.

"The fire of Tuesday morning, October 2, 1923, started in the woodwork on the second floor and because of this same hollow tile construction the shops on the ground floor were uninjured except by water and were in full operation the morning after the fire."

OUACHITA CLAYS TO BE DEVELOPED

A part of the large clay deposits which are to be found in the Ouachita Valley, La., will become the object of an intensive development in the near future. A corporation to be known as the Louisiana Brick Manufacturing Co. is now being formed at Monroe, La., to carry on this project. The new company will build a large and modern brick manufacturing plant at Monroe for the utilization of the Ouachita clays, which are pronounced by experts to be of a very superior quality. Extensive clay-bearing properties have been acquired by the promoters of the enterprise, and an early commencement of active operations is predicted.

NEW FACE BRICK PLANT IN SIGHT

The Elk River Clay Products Corporation of North East, Md., will engage in the manufacture of standard buff face brick of the higher grade. This company will also mine high grade clay for delivery to other manufacturers. An excellent quality of white sand used in the manufacture of glass will also be marketed. A modern plant is now being erected by this company, which has secured 92 acres of land located on the Elk River at North East which permits the transportation of its commodities by water. Some construction machinery has already been purchased and shipped to the site.

MAY BUILD PLANT IN NORTHAMPTON

James W. Riley, M. J. Gleason and Thomas Ryan of Northampton, Mass., have purchased a tract of land on North King Street in that city upon which it is planned to establish a brick yard to begin operations next Spring.

MOBERLY WILL MAKE A FACE BRICK

The Moberly (Mo.) Paving Brick Co. has announced that it will begin the manufacture of a rough texture brick for facing purposes the first of the year. The company will still continue to make paving brick. The same clay is to be used in making the new brick, but a different process will be employed. According to Manager W. L. Barr, the brick plant is now employing 110 men and has an approximate annual payroll of $125,000. A total of about $75,000 is spent locally for supplies in addition to this amount. The output of the Moberly Paving Brick Co. is now said to be 18,000,000 brick annually.

HUMBOLDT PLANT SOLD

The Humboldt Brick Works, owned by the Nebraska Clay Products Co. of Omaha, has been sold to the Advance Brick Co. of Omaha and work is expected to be resumed at the yard next spring.

FIRE DESTROYS YORK PLANT

The extensive works of the York Brick & Tile Co. in North York, Neb., burned down December 1, 1923. The fire is believed to have started in the boiler room. Large storage and drying sheds were consumed. Only the residence of Frank Burnham, the manager, and the barns and garage were saved.

ANOTHER PLANT FOR NEW HAMPSHIRE

The Berlin (N. H.) Brick Co. has been incorporated to manufacture brick, with an authorized capital of $5,000, it is stated.

CONCORD BRICK CO. INCORPORATED

The Concord (N. H.) Brick Co. has been incorporated, it is stated, and will manufacture brick and clay products. Arthur W. Stevenson is president, Percy R. Sanders, secretary, and Ervin W. Porter, treasurer, all of Concord. The company has purchased the George W. Allbee farm and plans to manufacture about 50,000 brick per day. Sand struck common brick of high grade will be manufactured.

NEW YORK ADDS ONE TO FAMILY

The Gormley Brick Corporation of Cortlandt, N. Y., has been incorporated with a capital stock of $160,000, with P. G. Wehle as incorporator, a report states.

FIRE DAMAGES JEWETTVILLE PLANT

Fire of unknown origin recently damaged the plant of the Jewettville (N. Y.) Clay Products Co. The loss was estimated to be in the neighborhood of $70,000.

NEW YORK STOCKING 600,000,000 BRICK

The brick market outlook for the New York district is extremely promising. It is estimated that 600,000,000 brick will be in readiness for builders when construction work is resumed on a wholesale scale next spring. Eastern brick manufacturers state that this is a 50 per cent. greater winter stock than any accumulated in recent years.

FIRE DAMAGES CONSOLIDATED PLANT

Fire of undetermined origin caused a loss of $20,000, to the plant of the Consolidated Clay Products Co. at Corning, Ohio. Several buildings and kilns were badly damaged.

ANOTHER COMPANY FOR OHIO

The Buckeye Shale Brick Co., Wickliffe, Ohio, has been incorporated with a capital of $500. The incorporators are M. E. Kundmiller, Jean B. Clyde, Ralph W. Edwards, Patrick D. Collins, and A. K. Strong.

FORM TRICOUNTY BRICK CO.

The Tricounty Brick Co., Roseville, Ohio, has been incorporated with a capital stock of $500. W. R. Crowley, C. F. Kelly, O. K. Parrett, H. D. Bergin and Arthur L. Rowe are the incorporators.

FACE BRICK SALES DECLINE

A slowing up in the face brick industry in the Canton, Ohio, district is reported by Paul B. Belden, of the Belden Brick Co. A slackening in outside construction in home building is said to be responsible.

"Volume of business in the face brick industry this fall com-

S E CO E

You Can Increase Your Output—

with a Schaffer POIDOMETER because it does all the work of the pug mill man —always on the job—absolutely automatic, accurate and dependable.

It speeds production from dry pan all the way down the line.

Let us show you where you will profit by using the POIDOMETER.

Schaffer Engineering & Equipment Co.
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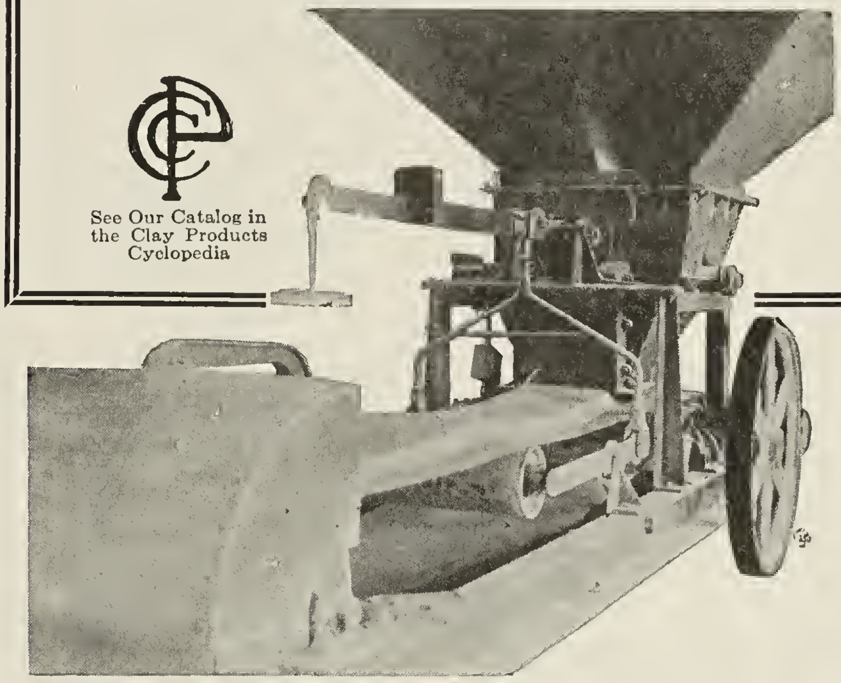
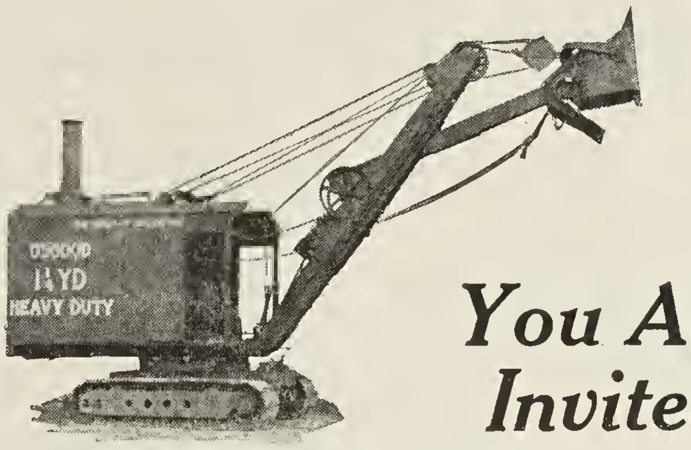
See Our Catalog in the Clay Products Cyclopedia





You Are Invited

to investigate OSGOOD Steam Shovels. We are sure that your closest inspection of an OSGOOD will prove to you more surely than any thing we might say, the reason why they are so rapidly gaining in favor.

Talk to the man who owns or operates an OSGOOD and get your information first hand. Let us tell you where the shovel nearest you is located.

Have you received our Illustrated Bulletins 231, 235, 236? Yours for the asking.

¾—1—1¼ Revolving Steam Shovels, Clamshells, Draglines, Cranes.
1½ to 6 Cu. Yd. Railroad Type Steam Shovels.

The OSGOOD Company
MARION, OHIO .:. U. S. A.

You Do This But Once—

When you install ROBINSON KILN BANDS on your kilns. They will eliminate the chances of your kiln walls bulging and cracking, thus making them leak-proof. Many satisfied users in the industry.

Write for full data, also for catalog of clay machinery.

FRANK H. ROBINSON, Inc.

Dryer Cars and Clay Working Equipment

918-920 Behan St., N. S.

Factory and General Office PITTSBURGH, PA.

YOU

Might as Well Gamble on the Gee Gees

Every time you guess at correct kiln temperatures you gamble on securing satisfactory results. You might as well gamble on the gee gees!

Human judgment in brick burning is like human judgment on the race course. YOU LOSE!

Quit *guessing* at burning temperatures. The Thwing Chart is like a map—it tells you just where you are —knowledge means profits.

THWING INSTRUMENT CO.
336 Lancaster Ave.
PHILADELPHIA, U. S. A.

Thwing PYROMETERS

pared favorably with that of the same period a year ago. The outlook for the industry for spring is very good," Mr. Belden said.

Plants of the Belden company are operating now on curtailed schedules, and repairs are being made at several of their plants.

FORM GREENFORD FIRE CLAY CO.

F. J. Klensner, James Lamb, Mrs. James Lamb, Thomas Halton and L. M. Lambeth are named as the incorporators of the Greenford Fire Clay Mfg. Co., Greenford, Ohio. This company has been formed with a capital stock of $250,000, it is said.

WATER SHORTAGE CAUSES SHUTDOWN

The Shawnee, Ohio, plant of the Ironclay Brick Co. has been closed down because of lack of water. The fall has been unusually dry and as a result the water supply gave out. The company is taking advantage of the shutdown to make necessary repairs on the machinery. Steps will be taken to start operations before the first of the coming year.

$22,000 FIRE LOSS AT DEFIANCE PLANT

Fire recently caused $22,000 damage to the plant of the Defiance (Ohio) Clay Products Co. It is thought that the fire was of incendiary origin. The blaze broke out first in the machine building and later in a cattle barn 60 yards away. Six head of cattle and two horses, the property of Manager J. Molly, were burned to death. Officials say the plant will be rebuilt just as soon as insurance is adjusted.

CLEVELAND COMPANY TO MAKE CONCRETE BLOCK

The Cleveland (Ohio) Builders Supply & Brick Co., a large manufacturer and dealer in clay products, has established a department for the manufacture and sale of concrete building units. C. E. Ehle is manager of the concrete products department. The company is operating eight concrete block machines, it is said.

DAVIS SELLS INTEREST TO SPRANKLE

F. O. Davis of Lisbon, Ohio, who with J. R. Sprankle of Cleveland, owned the entire stock of the Saratoga Fire Clay Co., operating the former Card and Prosser clay mines, near Lisbon, the old Power Clay Company's mines at Negley, O. and at Cannelton, O. has disposed of his interests in the property to Mr. Sprankle. Mr. Sprankle will continue to operate these properties from his general offices in Cleveland.

SHUT DOWN BURTON-TOWNSEND PLANT

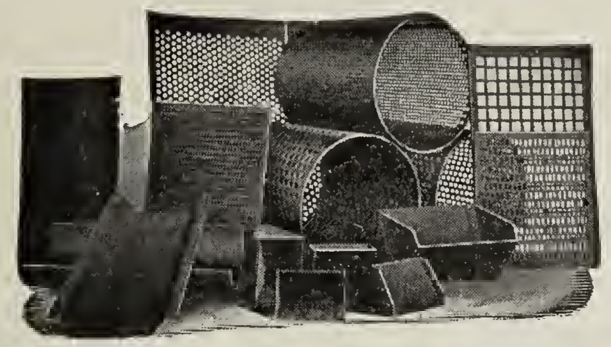
Arthur M. Crumrine, of Columbus, Ohio, receiver for the Burton Townsend Co., after two days' conference with R. C. Burton, custodian of the company, ordered temporary closing down of the two brick plants and coal mine operated by the Burton-Townsend Co., at Zanesville. The shutdown became effective November 24.

Mr. Crumrine issued a statement following a conference with superintendents and department heads which was as follows:

"After analyzing the general business situation and particularly the business of the Burton-Townsend Co., I have determined on a temporary shut down of the plants of the company in order to conserve expenses. There is usually a lull in the paving brick industry at this time of the year and it is for this reason that we are shutting down temporarily.

"During the four months that are passed, under the direction of the receivers, The Burton-Townsend Company has shown a substantial net profit.

"The financial condition of the Burton-Townsend Company



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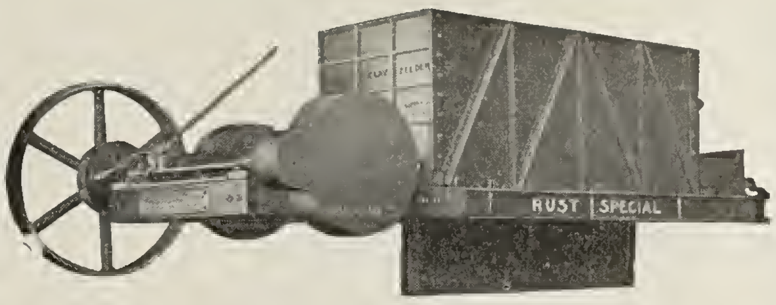
FOR ALL PURPOSES

ELEVATOR BUCKETS
CONVEYOR TROUGH and FLIGHTS
STACKS, TANKS,
GENERAL SHEET and
LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL
PLATE CONSTRUCTION

Ask for your copy of the
Perforated Metal Handbook

HENDRICK MFG. COMPANY
CARBONDALE, PA.
NEW YORK OFFICE: 30 Church St.
PITTSBURGH OFFICE: 544 Union Trust Bldg.
HAZLETON, PA., OFFICE: 705 Markle Bank Bldg.

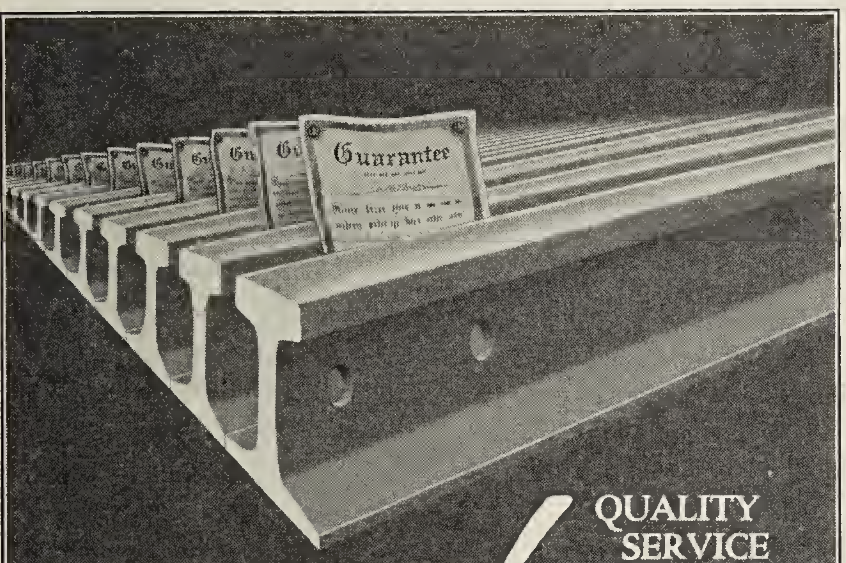


Improve Your Mix
with the
MARION
"RUST SPECIAL"
Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing
Rust Feeder and full line of
Marion clay plant equipment.

Marion Machine Foundry & Supply Co.
P. O. Box 395
MARION, INDIANA



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RAILS

New Rails
Relaying Rails
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Switches
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Etc.

30% to 50% below price of new rails.
Shipped subject to inspection and approval at destination.

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WAREHOUSES:
PITTSBURGH PHILADELPHIA JERSEY CITY HAMILTON, O.
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PITTSBURGH-PENNSYLVANIA

ROBERTSON-PEASE CO.
CENTURY BUILDING CLEVELAND, OHIO.
ENGINEERS

We offer our services, as your engineers, on the design or construction of:

Tunnel Kilns.
Periodic or Compartment Kilns.
Insulation of Existing or New Kilns.
Fuel Systems.
New Plants and Re-Conditioning of Old Plants.
Special Installations for your particular product.

ENGINEERS
ROBERTSON-PEASE CO.
CENTURY BUILDING CLEVELAND, OHIO.

VEELOS

TRADE MARK REGISTERED U.S. PAT. OFFICE
JUNE 21st, 1910

VEELOS
Genuine Balata Belting

When you do just what another does and as well as he does it, you have many peers, but the minute you do ordinary work just a little better than others do it, or do difficult work with unusual ease or excellence, you are different. Your value jumps. VEELOS Genuine Balata Belts do the regular work in a better way,—and hard work they do unusually well. They are built for it.

The Standard Belt of the World

MANHEIM MANUFACTURING & BELTING CO.
MANHEIM, PA.

IN EVERY BRANCH of CLAY PRODUCTS MANUFACTURE STEVENSON'S EQUIPMENT CUTS THE COSTS

THE STEVENSON CO.
Wellsville, Ohio
Western Sales & Engr. Office
802 Monadnock Bldg. Chicago, Ill.
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Dry Pans
Wet Pans
Roll Crushers
Sewer Pipe Presses
Sewer Pipe Turners
Tile Presses
Press Feeders
Crusher Feeders
Pan Feeders
Bucket Elevators
Gravity Elevators
Brick Barrows
Tile Barrows
Sewer-Pipe Barrows
Gigs,
Etc.

STEVENSON

at the present time is very healthy. We have plenty of cash in the bank, accounts receivable and finished product in the yard.

"The bankruptcy proceedings started some time ago in Columbus we feel will be dismissed as the Burton-Townsend Company is not insolvent in any manner."

OREGON TO GET NEW COMPANY

W. H. Schroeder, Leslie Schroeder and Earl Schroeder are named as the incorporators of the Arago Brick & Tile Co. of Coquille, Ore., formed with a capital stock of $50,000, it is said.

FORM COMPANY AT HARRISBURG

The Moore Brick Co. of Harrisburg, Pa., has been incorporated with a capital stock of from $90,000 to $160,000.

FIRE BRICK PLANT FOR PHILADELPHIA

A plant for the manufacture of fire brick, silica and by-products is being planned by the Hecker Bros., Philadelphia, Pa., at a cost of $100,000, it is reported. This plant is to be located on the Air Line Railway. It will develop minerals used in the manufacture of toilet articles, paints, and so forth. The company will also manufacture fire brick with initial output of 60,000 brick daily. It is planned to install an 85,000 pound pressing machine and other equipment. Charles L. Jackson will be plant manager and H. B. Blackwell, engineer.

FIRE DAMAGES BOULEVARD BRICK CO.

Recently the Boulevard Brick Co., Philadelphia, Pa., suffered a damage by fire which is estimated to amount to more than $10,000. The blaze which originated in a kiln shed, spread quickly to another shed and to the wooden storage sheds, which were destroyed. Five men were compelled to fight their way thru smoke and flames to safety when the fire started. Employes first attempted to check the fire, but were unable to control it.

TENNESSEE TO HAVE NEW COMPANY

The Cardiff Brick & Tile Mfg. Co., Oakdale, Tenn., has been organized by local business men, a report states. The capital stock is $20,000; the incorporators are: A. E. Venable, H. O. Ramey, H. D. Justice, W. Y. Boswell, S. N. Oakley.

KNOXVILLE PLANT SHUTS DOWN

It is reported that the plant of the Knox Clay Products Co., Knoxville, Tenn., will not operate during the winter months. A sufficient stock has been accumulated for winter needs.

PLANT PLANNED FOR MURFREESBORO, TENN.

All the necessary capital has been subscribed and a strong co-partnership organization effected, composed of R. B. Roberts, J. C. Beesley, J. M. Avent and the firm of Morgans & Ball, for the new Murfreesboro (Tenn.) Brick Co. 65 acres of land have been secured for this project. 800 pounds of the clay were sent to Dayton, Ohio, to be tested by experts and reports showed it to be entirely satisfactory for the manufacture of face and common brick. The installation of the machinery will begin not later than January 1. The plant is expected to be in operation by early spring. The capacity of the plant will be 40,000 brick per day.

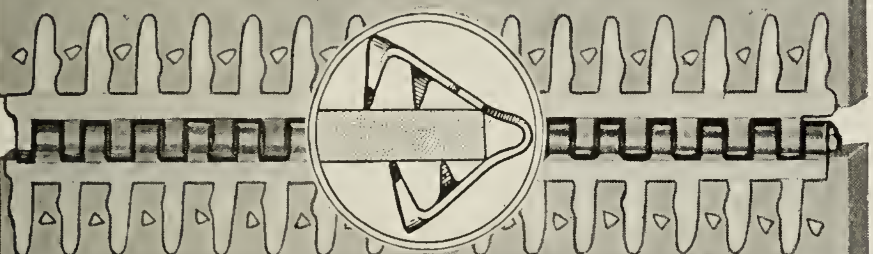
R. D. HERBERT HEADS TRAFFIC CLUB

R. D. Herbert of W. G. Bush & Co. and T. L. Herbert & Co., Nashville, Tenn., has been elected president of the newly organized Traffic Club of Nashville. This club was formed with a membership of 60. Its purpose is to cultivate better personal relations and friendships between those interested in the transportation of freight and passengers, carriers and shippers and to promote their mutual interests.

ALLIGATOR

TRADE MARK REG. U. S. PAT. OFFICE

STEEL BELT LACING



"Every Tooth a Vise"

The teeth of Alligator Steel Belt Lacing penetrates the belt lengthwise leaving the long burden bearing fibres intact. The belt is not weakened as it is when holes are punched. Each tooth of Alligator Steel Belt Lacing is clinched down flat binding the belt fibres in equal service making "Every Tooth a Vise." No matter what the pull or twist in service, these teeth when properly clinched bind the belt in a grip of steel.

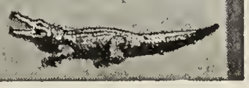
Try Alligator Steel Belt Lacing—quickest and easiest to apply. Permanent. Sold by all leading dealers.

FLEXIBLE STEEL LACING COMPANY
4671 Lexington St., Chicago, Ill.
In England at 135 Finsbury Pavement, London, E. C. 2

"Every Tooth A Vise"

Just a Hammer to Apply It

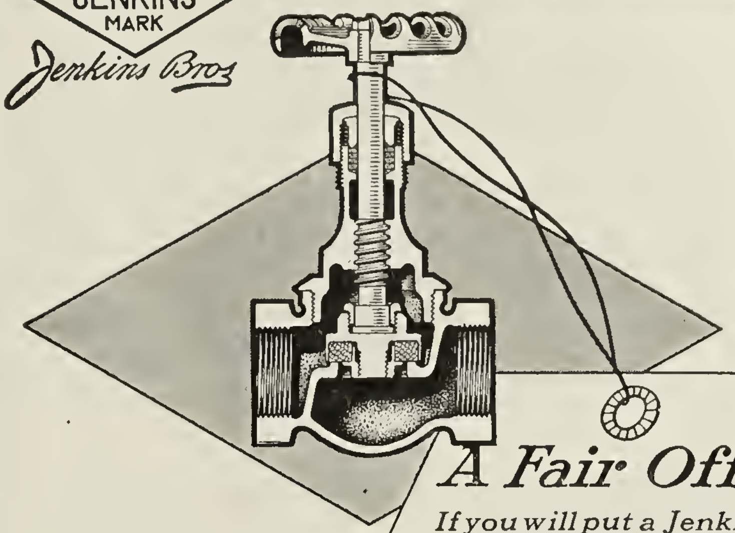
For Every Size and Kind of Belt



Made for maximum service not merely the average

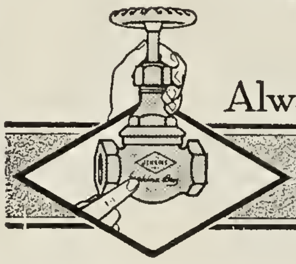
TRADE JENKINS MARK

Jenkins Bros



A Fair Offer

If you will put a Jenkins Valve on the worst place you can find, where you cannot keep other valves tight, and if it is not perfectly tight or does not hold steam, oils, acids, water, or other fluids, longer than any other valve, you may return it and your money will be refunded.



JENKINS BROS.
80 White Street, New York, N. Y.
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Always marked with the "Diamond"

Jenkins Valves

SINCE 1864

Salem Elevator Buckets

We are manufacturers of the original SALEM ELEVATOR BUCKET which is used for handling all classes of materials in many different industries.

This type of bucket is of one piece construction, with rounded contour throughout, smooth in form, durable in service and clean in handling and delivery of materials.

There are no seams in front nor on the ends, the laps being made on the back and bottom at the ends. On the back the laps are riveted or spot welded; on the bottom the end pieces are bent under and hammered tight.

The widest range of service is covered by a very full line of regular types and sizes and made in various gauges of steel, from the lightest practical for ordinary work to the heaviest necessary for the most severe duty.

Write for new price list.

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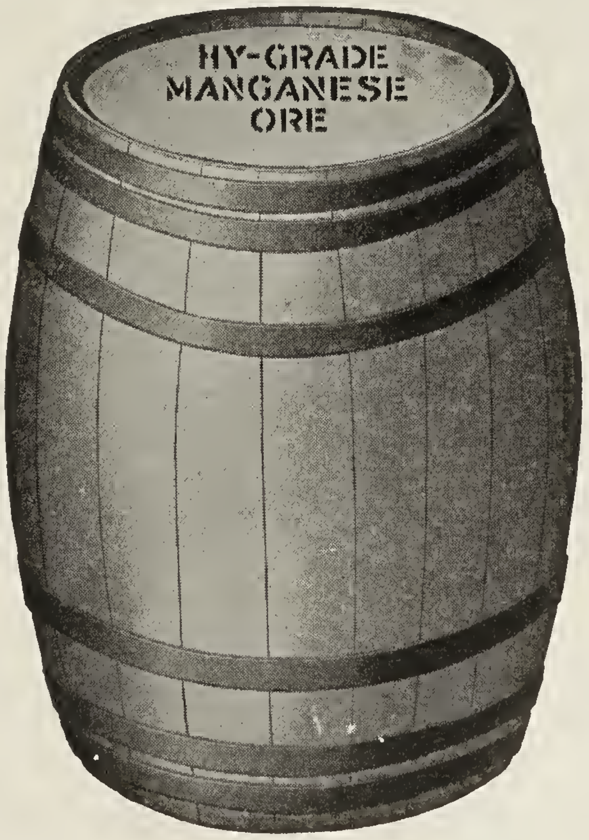
Sales Offices in Principal Cities



HY-GRADE MANGANESE CO.
WOODSTOCK, VA.

Miner and Grinders

Especially Prepared for Brick Making

NATIONAL MANGANESE
Gives Diversity to Face Brick

Meet the demand of the building public today for varicolored brick.

NATIONAL MANGANESE enables you to
—make high-priced French Grays out of light-burning and buff brick.
—produce novel speckled effects.
—convert red-burning clays into a popular shade of brown.

NATIONAL PAINT & MANGANESE CO.
P. O. Box 184, LYNCHBURG, VA.

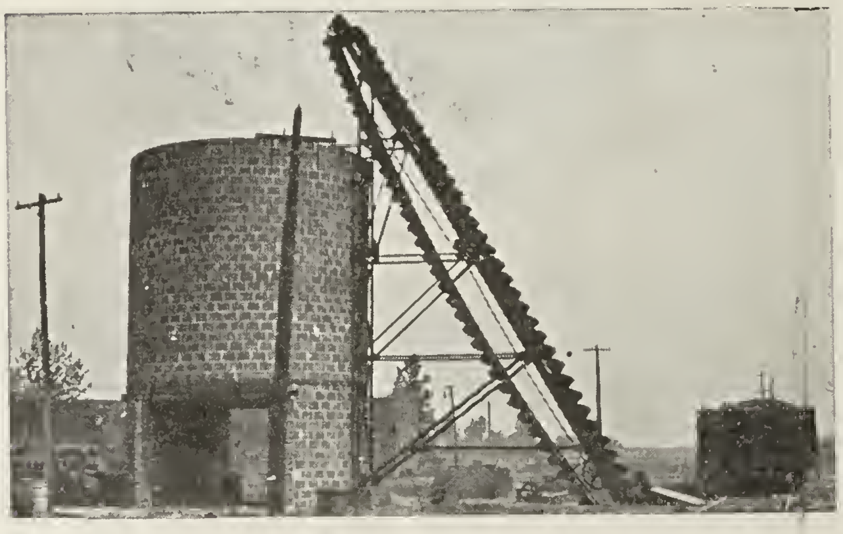
Miners and Grinders for More than a Quarter Century

Write Today For Samples and Prices

SUNBURY
AUTOMATIC CAR UNLOADER
Loads or unloads coal at the rate of 30 to 50 tons every hour. Only one man needed.

Let us tell you what other clay plant operators are doing with the Sunbury in saving time, money, and labor.

The Sunbury Manufacturing Co.
Sunbury, Ohio



STANDARD WANTS GREATER CAPACITY

The Standard Brick Co., at Prewitt, Tex., is increasing the capacity of its plant according to reports.

BUYS PLANT AT CHARLOTTESVILLE, VA.

Price Yancey has just purchased for a substantial sum the clay beds and equipment of Easton Updike, Charlottesville, Va. Mr. Yancey plans to remodel the entire place in the immediate future. New and modern machinery for the manufacture of brick will be purchased and other improvements made at the place to the extent of from $6,000 to $7,000, and it is planned to give Charlottesville and vicinity a good clay plant. Manufacturing and the taking of orders will begin on or about November 18.

REBUILDING OLD PLANT

Recently a permit for $8,000 was taken out by the Tacoma (Wash.) Brick & Tile Co. for the purpose of rebuilding the old Goss brick works.

OFFERS INTERESTING CERAMIC COURSE

The College of Mines, University of Washington, at Seattle, is announcing its 28th Annual Winter Mining Session, to be held January 4 to March 20, 1924. The course is open to all men interested in mining and no previous training is required for entrance. Anyone who can read and write English may enroll. Of special interest to the clay products industry is the branch of the course relating especially to ceramics. Under this subject will be covered the following: clay testing; lime, plaster and cement; common and face brick; stoneware; whiteware; refractories; glass studies; clay technology and terra cotta manufacture. In addition to the ceramic course, the Winter Mining Session will include a study of quartz mining, placer mining and coal mining.

The cost of the course includes a University fee of $20 and sufficient deposits to cover material actually used. Anyone desiring more information about this Session should write to the College of Mines, University of Washington, at Seattle.

REPORT OF FACE BRICK DEALERS' MEETING

(*Continued from page* 843)

Before adjourning the Face Brick Dealers Association passed resolutions pledging themselves to further a more intimate cooperation with manufacturers. These resolutions are as follows:

WHEREAS, the Face Brick Dealers are deeply interested in increased markets, a broader distribution of face brick and increased use by the public;

AND WHEREAS, it is desirable to place the Face Brick Industry on a high plane of efficiency, to have for distribution a commodity which is continually improving in quality;

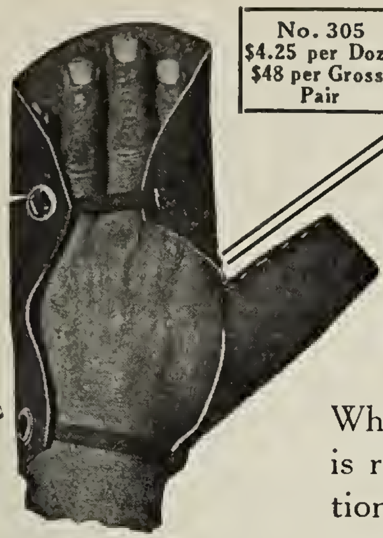
AND WHEREAS, to bring about these results it is essential that not only the manufacturer but the dealer should make every possible lawful effort for their accomplishment;

AND WHEREAS, we believe that the best way to improve the quality and increase the demand for face brick is thru the activities of the American Face Brick Association; therefore, be it

RESOLVED, That this Association and its members do all in their power to increase the demands for this commodity, and to assist the manufacturers in the accomplishment of their objects; and, be it further

RESOLVED, That we do use our influence to induce those manufacturers who are not now members of the American Face Brick Association to become members of that organization; and, be it further

RESOLVED, That the president appoint a committee to arrive at ways and means to accomplish these objectives.



No. 305
$4.25 per Doz.
$48 per Gross Pair

Save Injuries Increase Production

When the thought of danger is removed, the daily production per man is increased.

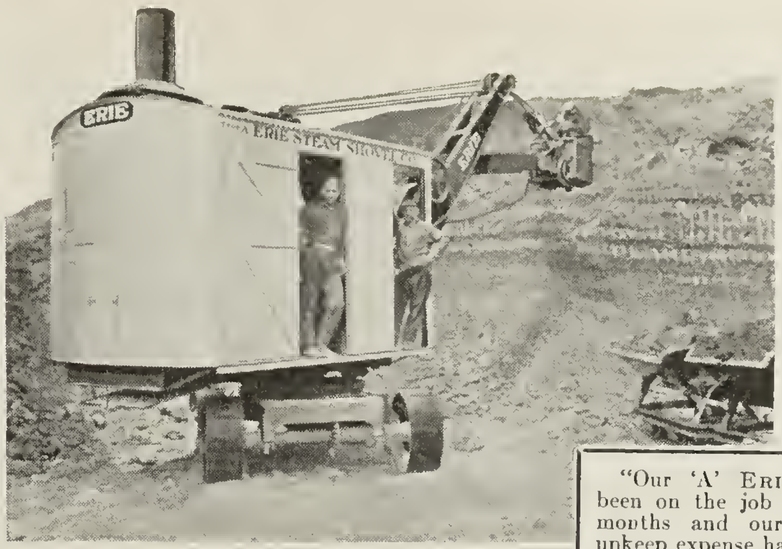
Outfitting your men with proper hand protection is a small item compared with the loss of time and compensation you suffer if you don't.

DES MOINES GLOVE
& MANUFACTURING CO.
DES MOINES, IOWA

No. 300, $7.80 per doz. $90 per Gross Pair

FREE

To any manufacturer whose men have not been using Des Moines Hand Pads who will clip out the Hand Pad shown here and mail it to us with his letterhead we will send FREE a pair of Des Moines Pads.



"Our 'A' ERIE has been on the job for 30 months and our total upkeep expense has been only $49. This was entirely for dipper teeth and hoisting cable."—*J. S. Boone, Oconee Brick & Tile Co., Milledgeville, Ga*

Increase your profits by reducing costs—

The "A" ERIE will save you money by cutting down your pit costs. Lower first cost—and less operating cost.

In output, this 13-ton shovel compares very favorably with shovels 7 to 8 tons heavier and costing $1500 to $2000 more. Has often dug 300 to 400 cu. yards per day in stiff clay or shale; in stripping off earth, as high as 700 cu. yards per day.

And you will find it far cheaper to run. Carefully checked records show that ERIE Shovels cost only 1/3 as much for upkeep, and *make a corresponding saving in working time.*

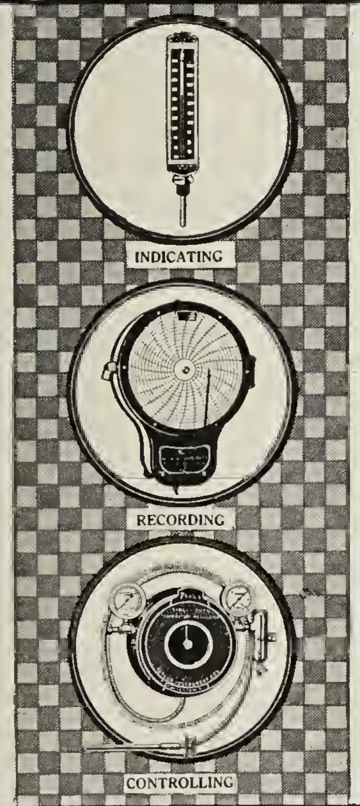
Write for full information, and photos of "A" ERIES excavating clay and shale — ask for Bulletin B-22

ERIE STEAM SHOVEL CO., Erie, Pa., U. S. A.
Builders of ERIE Steam Shovels and Locomotive Cranes

Branch Offices and Representatives throughout U. S. A.

ERIE Revolving Shovels

Tycos temperature instruments



Brick?
Tile?
Pottery?
Terra Cotta?
Or Whatever You Make

Use *Tycos* Temperature Instruments to Indicate, Record, or Control the critical temperatures. Invaluable for obtaining uniform results and standardizing the manufacture of porous or non-porous ware.

Tycos Pyrometers applied to Up-Draught, Down-Draught Kilns or Ring Furnaces assist you to control temperatures.

Tycos Catalog on Pyrometers for Indicating, Recording, and Controlling Temperatures is the catalog you need.

Taylor Instrument Companies
ROCHESTER NY.

469 Theres a *Tycos* and *Taylor* temperature instrument for every purpose

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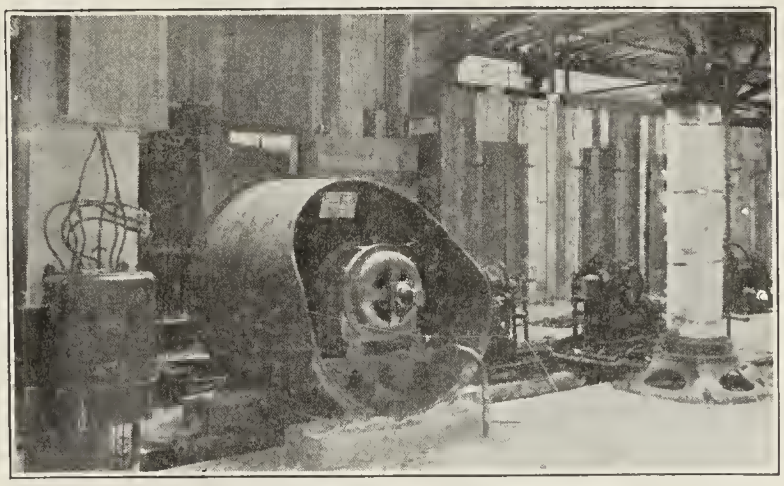
Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

Ask for information regarding T-J System of Burning Oil.

Tate-Jones & Co. inc.

Furnace Engineers Established 1898

PITTSBURGH, PA.

New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis

THE MINTER SYSTEM

200 Lbs. Coal per Ton of Ware

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. Saving first cost of 6 tunnels and equipment.

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

DON'T BUILD BEFORE YOU KNOW

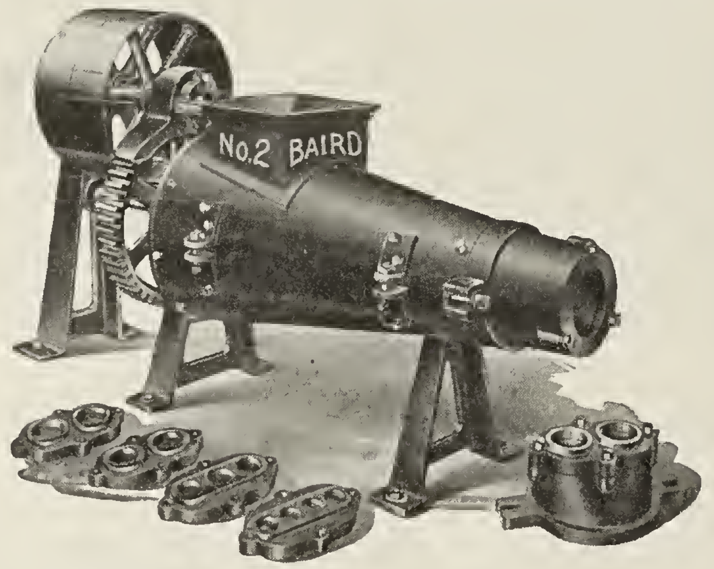
The Minter System Plants are Producing the Cheapest Building Material made in America today.

The Minter System

HOME OFFICE
Albany, Georgia

BRANCH OFFICE
215 Doctors Bldg.
Columbus, Georgia

BAIRD
PUG MILL



BAIRD PUG MILLS are giving excellent service in potteries of every description, domestic and foreign plants included. Special features consist of Bessemer steel body, square shaft equipped with cast steel blades, sturdy construction thruout, initial cost and upkeep exceptionally low.

ANDREW BAIRD
Designer - Manufacturer - Pottery Machinery
409-10 Burns-Gray Building, Detroit, Mich.

Machinery and Equipment

Devices and Methods, New and Old Concerning Which Information of Interest to the Clay Manufacturer Is Published

---

NEW STEVENSON SEWER PIPE TRUCK

The Stevenson Co., of Wellsville, Ohio, has put onto the market a new sewer pipe and tile truck to which the cognomen the "uncovered wagon" has been given.

This truck, A 43, is equipped with plain or Timken bearings, with solid rubber-tired wheels of Goodyear make or plain iron wheels and with Alemite lubrication.

These trucks have a wide platform so that much larger loads can be hauled, thus reducing expenses.

It is interesting to see the men returning without a load from the kiln and propelling one of these trucks by pushing it with their feet, very much like the youngsters do with a "kiddie-car."

These trucks are much easier on the men and breakage is also reduced.

* * *

ROSTER OF FACE BRICK MEETING

(*Story on Page* 836)

Acomb, E. E., The Pursell Co., Dayton, Ohio.
Adams, A. B., Key-James Brick Co., Chattanooga, Tenn.
Adams, J. M., Ironclay Brick Co., Columbus, Ohio.
Adams, Harvey C., Danville Brick Co., Danville, Ill.
Allen, Aurelius, Richards Brick Co., Edwardsville, Ill.
Alexander, Magnus W., National Industrial Conference Bd., New York City.
Andres, John, Standard Brick Mfg. Co., Evansville, Ind.
Aschemeyer, F. C., Hydraulic-Press Brick Co., St. Louis, Mo.
Austin, C. P., Binghamton Brick Co., Binghamton, N. Y.

Baker, John T., Sunderland Bros. Co., Omaha, Nebr.
Baldwin, Harry L., American Face Brick Assn., Chicago, Ill.
Banker, F. G., Brooklyn Brick Co., Indianapolis, Ind.
Banker, Mrs. F. G., Indianapolis, Ind.
Ballou, B. W., Kansas Buff Brick & Mfg. Co., Kansas City, Mo.
Barnett, E. G., Geist Bldg. Mtl. Co., Cleveland, Ohio.
Barnhart, W. R., Medal Paving Brick Co., Cleveland, Ohio.
Bass, George A., Hydraulic-Press Brick Co., St. Louis, Mo.
Belden, P. B., Belden Brick Co., Canton, Ohio.
Bell, N. H., Fredenburg & Lounsbury, New York City.
Bilque, Geo. A., Gloninger & Co., Pittsburgh, Pa.
Binyon, L. D., S. S. Kimbell Brick Co., Chicago, Ill.
Bitter, Fred H., Am. Enameled Brick & Tile Co., New York City.
Black, John H., Jewettville Clay Products Co., Buffalo, N. Y.
Black, W. C., Hay-Walker Brick Co., New York City.
Bolster, L. J., L. J. Bolster Co., Inc., Louisville, Ky.
Bolster, Mrs. L. J., Louisville, Ky.
Bonner, Chas, Bonner & Marshall Brick Co., Chicago, Ill.
Bowen, Chas. A., Common Brick Mfrs. Ass'n., Cleveland, Ohio.
Bowen, Dana T., Bowen Brick & Supply Co., Cleveland, Ohio.
Brickel, Mrs. W. D., Ironclay Brick Co., Columbus, Ohio.
Bogk, F. C., Ricketson Mineral Paint Works, Milwaukee, Wis.
Bogue, J. W., V. V. V. Brick & Tile Co., Neodesha, Kans.
Boyd, Chas. D., Ricketson Mortar Colors, Milwaukee, Wis.
Brown, E. M., Standard Brick Co., Crawfordsville, Ind.
Bryan, Chas. H., Common Brick Mfrs. Association, Detroit, Mich.
Bulkley, Lawrence A., Columbus Builders Supply Co., Columbus, Ohio.
Butterworth, F. W., Western Brick Co., Danville, Ill.

Cable, Walton W., Walton W. Cable Co., New York City.
Cadmus, E. L. R., N. J. Masons' Material Assn., Bloomfield, N. J.
Campbell, H. H., Toronto Fire Clay Co., Toronto, Ohio.
Carlyle, G. E., Carlyle-Labold Co., Portsmouth, Ohio.
Carlyle, Mrs. G. E., Portsmouth, Ohio.
Carlyle, Edw. C., Carlyle-Labold Co., Portsmouth, Ohio.
Carpenter, Amos M., Amos M. Carpenter, Kalamazoo, Mich.
Chaffee, H. S., Buffalo, N. Y.
Childs, Robert W., Good, Childs, Bobb & Westcott, Chicago, Ill.
Clark, E. C., Kittanning Br. & Fire Clay Co., Pittsburgh, Pa.
Clay, Matt M., Clay-Ingels Co., Lexington, Ky.
Clay, Mrs. Matt M., Lexington, Ky.
Colburn, R. R., Ochs Brick & Tile Co., Minneapolis, Minn.
Conley, Edw. T., Bradford Brick & Tile Co., Bradford, Pa.
Cobbe, A. M., A. M. Cobbe Brick & Tile Co., Erie, Pa.
Cooper, R. B., Fiske & Co., Inc., New York City.
Cowman, G. G., Claycraft Mining & Brick Co., Columbus, Ohio.
Cowman, Mrs. G. G., Columbus, Ohio.
Crouch, D. Frank, B. Mifflin Hood Brick Co., Nashville, Tenn.
Cutler, L. R., Entwisle & Co., New York City.

Darrow, A. H., Wis. Face & Fire Brick Co., Milwaukee, Wis.
Davis, A. E., Western Brick Co., Indianapolis, Ind.
Dean, G. P., Pfotenhauer Nesbit Co., New York City.
Deckman, Chas. G., Medal Brick & Tile Co., Cleveland, Ohio.
Defrees, V. W., C. H. Defrees, South Bend, Ind.
Degenhart, W. Jos., Jewettville Clay Products Co., Buffalo, N. Y.
Dempster, A. P., Am. Enameled Brick & Tile Co., New York City.
Demuth, W. F., Canton Brick & Fireproofing Co., New Phila, Ohio.
Dickinson, Guy, Ark. Brick & Tile Co., Little Rock, Ark.
Dickinson, W. W., Jr., Little Rock, Ark.
Dolben, J. Alfred, Dolben & Co., Boston, Mass.
Donohue, John H., Jr., Corning-Donohue, Inc., St. Paul, Minn.

Dore, Herbert, Official Reporter, Chicago, Ill.
Downes, A. H., Cook & Brown Lime Co., Oshkosh, Wis.
Duty, Spencer M., Medal Brick & Tile Co., Cleveland, Ohio.

Ellingen, O. J., H. D. Conkey Co., Mendota, Ill.
Elwood, Clyde B., Watts-Morehouse Co., Jackson, Mich.
Entwisle, E. B., Entwisle Co., Inc., New York City.
Entwistle, Jos., Terre Haute Vit. Brick Works, Terre Haute, Ind.
Ernstberger, Chas. A., Tomkins Bros., Newark, N. J.
Everhard, M. Mc., Everhard Co., Massillon, Ohio.

Fairleigh, A. H., R. B. Tyler Co., Louisville, Ky.
Findlay, R. L., Hay Walker Brick Co., New York City.
Finzer, W. D., Finzer Bros. Clay Co., Sugar Creek, Ohio.
Fisk, Wilbur C., Hocking Valley Prod. Co., Logan, Ohio.
Flanders, Ed., Marietta Shale Brick Co., Marietta, Ohio.
Fowler, J. C., Watsontown Brick Co., Watsontown, Pa.
Freeman, T. B., Hay Walker Brick Co., Pittsburgh, Pa.
Friedlander, M., Hazelton Brick Co., Hazelton, Pa.
Fry, W. N., Fischer Lime & Cement Co., Memphis, Tenn.

Gaertner, E. C., Clay Products Co., Brazil, Ind.
Gammon, M. E., Building Supply News, Chicago, Ill.
Geist, H. F., Independent Brick & Tile Co., Cleveland, Ohio.
Gifford, W. H., Bowen Brick & Supply Co., Cleveland, Ohio.
Gillespie, R. M., Masons' Contractors Association, St. Louis, Mo.
Gloninger, John, R., Gloninger & Co., Pittsburgh, Pa.
Goar, Frank, W. G. Bush & Co., Nashville, Tenn.
Goar, Mrs. Frank, Nashville, Tenn.
Gould, H. H., Belt Line Brick Co., Minneapolis, Minn.
Grand, E. F., E. F. Grand Brick Co., Cincinnati, Ohio.
Grilk, Louis, Geo. L. Dyer Co., Chicago, Ill.
Grimsley, E. F., Hanover Brick Co., Hanover, Ohio.
Gunn, E. A., The Mars Co., Cleveland, Ohio.

Hall, Joe, T., J. T. Hall & Co., Harrisburg, Pa.
Hamilton, H. S., McArthur Brick Co., McArthur, Ohio.
Hanley, W. L., Jr., Bradford Brick & Tile Co., Bradford, Pa.
Hansen, Harry N., Toledo Plaster & Supply Co., Toledo, Ohio.
Harbison, R. C., Gaddis-Harrison Brk. Co., Dayton, Ohio.
Harker, O. A., Jr., Dixie Brick & Tile Co., Puryear, Tenn.
Harms, John, Lookout Paint Mfg. Co., Chattanooga, Tenn.
Harris, Charles F., A. S. Reid & Co., New York City.
Harris, Chester M., Harris-Murray Co., Cleveland, Ohio.
Harrison, Chas. F., Gaddis-Harrison Brick Co., Columbus, Ohio.
Hartung, Paul W., Belden Brick Co., Canton, Ohio.
Heizer, R. C., Toledo Plaster & Supply Co., Toledo, Ohio.
Herbert, T. L., Jr., W. G. Bush & Co., Nashville, Tenn.
Herbert, Mrs. T. L., Nashville, Tenn.
Herman, E. Olney, Tiffany Enameled Brick Co., Momence, Ill.
Herrmann, Chas. F., U. S. Brick Co., Tell City, Ind.
Hervey, E. C., Hydraulic-Press Brick Co., Indianapolis, Ind.
Hill, W. H., H. & R. Mining & Mfg. Co., E. St. Louis, Ill.
Hilsmeier, Theodore, Huntingburg Pressed Brick Co., Huntingburg, Ind.
Hindman, F. T., Fischer Lime & Cement Co., Memphis, Tenn.
Hoagland, W. H., Claycraft Mining & Brick Co., Columbus, Ohio.
Hodges, P. C., Claycraft Mining & Brick Co., Columbus, Ohio.
Hollowell, R. D. T., American Face Brick Association, Chicago, Ill.
Hood, B. Mifflin, Legg Brick Co., Atlanta, Ga.
Howard, E. C., Columbus Fire & Face Brick Co., Columbus, Ohio.
Howard, J. B., Albion Brick Co., Albion, Ill.
Howard, R. B., S. S. Kimbell Brick Co., Chicago, Ill.
Howington, Jas. T., Coral Ridge Clay Products Co., Louisville, Ky.
Howington, Mrs. Jas. T., Louisville, Ky.
Irwin, C. W., Hydraulic-Press Brick Co., Davenport, Iowa.
Jacobs, Harry W., Hazleton Brick Co., Hazleton, Pa.
Jacobsen, Ed. H., Cox & Co., Newark, N. J.
Janeway, Augustine S., Cox, Janeway & Co., Philadelphia, Pa.
Jenney, Harry T., Sterling Brick Co., Detroit, Mich.
Jewett, C. E., Hocking Valley Fire Clay Co., Nelsonville, Ohio.
Johannigman, J. G., Pursell Co., Cincinnati, Ohio.
Johnson, John C., Standard Salt & Cement Co., Duluth, Minn.
Jones, Clinton, Fultonham Tex. Brick Co., E. Fultonham, Ohio.
Jung, H. A., Nat'l Clay Prod. Ind. Assn., Chicago, Ill.
Kaufman, H. J., Claycraft Mining & Brick Co., Columbus, Ohio.
Kaup, John W., Fiske & Co., Inc., Boston, Mass.
Kemper, H. F., Kemper Material Co., Cleveland, Ohio.
Ketcham, P. R., O. W. Ketcham, New York City.
King, Miss Ethel M., Acme Brick Co., Danville, Ill.
Kleymeyer, H. C., Standard Brick Mfg. Co., Evansville, Ind.
Klocke, H. H., Continental Clay Co., Columbus, Ohio.
Knight, Edwin F., A. S. Reid & Co., Newark, N. J.
Koch, Wm. C., Twin City Brick Co., St. Paul, Minn.
Krueger, Leo A., Cleveland Clay Products Co., Cleveland, Ohio.
LaBar, Leo A., LaBar, Parsons & Pierce, Scranton, Pa.
Laberge, J. H., Hyde & Sons, Montreal, Can.
Lafountaine, F. C., Reliance Brick Co., Kansas City, Mo.
Lanahan, W. M., Indianapolis, Ind.
Landgrebe, G. C., Huntingburg Pressed Brick Co., Huntingburg, Ind.
Larrabee, W. M., Clinton Metallic Paint Co., Clinton, N. Y.
Laverty, J. L., Brazil Clay Co., Brazil, Ind.
Laverty, W. A., Brazil Clay Co., Brazil, Ind.
Laverty, Mrs. W. A., Brazil, Ind.
Lease, Earl M., D. C. Shorey Brick Co., Cincinnati, Ohio.
Lehman, David, Ironclay Brick Co., Columbus, Ohio.
Leonard, J. T., Belt Line Brick Co., Minneapolis, Minn.
Lingler, Martin, Martin Lingler, Hamilton, Ohio.
Littleton, Miss Mary Z., American Face Brick Association, Chicago, Ill.
Luckett, G. B., Crawfordsville Shale Brick Co., Crawfordsville, Ind.
Luckett, Mrs. G. B., Crawfordsville, Ind.
Luckett, Miss Esther, Crawfordsville, Ind.
Ludeman, H. J. F., Hay Walker Brick Co., Pittsburgh, Pa.
Luken, Miss Alice, Chicago, Ill.
McKlosky, B. K., O. W. Ketcham, Washington, D. C.
McCoy, John J., Wis. Face & Fire Brick Co., Milwaukee, Wis.
McKune, F. B., Hamilton, Canada.
McFadden, Paul., Toronto Fire Clay Co., Toronto, Ohio.
McKinley, Robert H., Martinsville Brick Co., Indianapolis, Ind.
McKown, W. R., Brooklyn Brick Co., Indianapolis, Ind.
McNees, C. B., Kittanning Clay Mfg. Co., Kittanning, Pa.
Mackenzie, D., Mackenzie & Co., Newark, N. J.
Madsen, L. V., Twin City Brick Co., St. Paul, Minn.
Mahoney, D. P., Ballou Brick Co., Sargeants Bluff, Ia.
Mandel, Jacob, O. W. Ketcham, Philadelphia, Pa.
Mars, G. C., American Face Brick Association, Chicago, Ill.
Marsh, A. C., Stone Creek Brick Co., Stone Creek, Ohio.
Marsh, W. P., Stone Creek Brick Co., Stone Creek, Ohio.
Martin, F. W., Twin City Brick Co., Minneapolis, Minn.
Martin, John D., Straitsville Imp. Brick Co., New Straitsville, Ohio.
Martin, Mrs. John D., New Straitsville, Ohio.
Martin, S. C., Kittanning Brick & Fire Clay Co., Pittsburgh, Pa.
Mattes, C. F., Decatur Brick Mfg. Co., Decatur, Ill.
Matthews, Daniel, Consolidated Brick Co., Charleston, W. Va.
Mernaugh, R. L., Alton Brick Co., St. Louis, Mo.
Micheal, Walter, Schuyler Rose, Mishawaka, Ind.

ATLAS
EXPLOSIVES
for quarrying

THE fact that Atlas AMMITE cannot freeze and, therefore, saves the cost and inconvenience of thawing is one reason for its popularity. A reason that is just as important to some users of explosives is the storing quality of AMMITE—it can be stored indefinitely in proper storage without the slightest deterioration.

And, above all, the right grade of AMMITE for the job does the work better and at a decided SAVING in blasting costs. The Atlas Service Man will help you determine what grade will effect the greatest economy in your work. Write nearest branch.

AMMITE
— *cannot freeze* —

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ATLAS EXPLOSIVES

Branch Offices:
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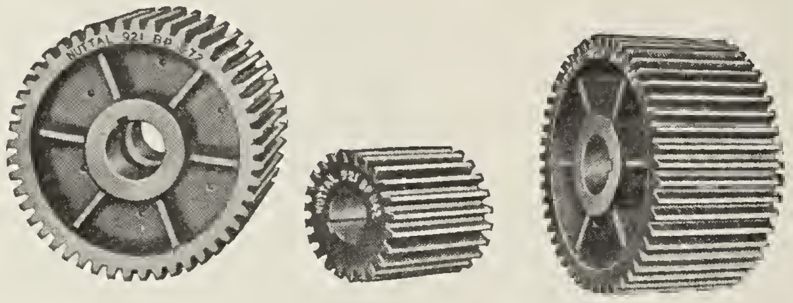
Nuttall Service
to the
Brick & Clay Industry


NUTTALL 921 BR 7?

Nuttall Cut Gears for any application in the Brick and Clay Industry are guaranteed to cost less than cast tooth gears to operate.

Nuttall Heat Treated Gears in any service are guaranteed to cost less than untreated gears because they last three to five times as long.

Nuttall Heat Treating Processes applied to many tools and appliances used in the Industry make them cost less because they make them last longer.

You pay many times for necessary plant betterments in unnecessary high costs if you delay installing them.

R.D.NUTTALL COMPANY
PITTSBURGH PENNSYLVANIA

Philadelphia Office: 430 Land Title Bldg.
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Nuttall

Miles, H. T., Sphar Brick Co., Maysville, Ky.
Miller, C. F., Darlington Brick & Mining Co., Darlington, Pa.
Millin, J. C., Kane Brick & Tile Co., St. Marys, Pa.
Moellering, Walter S., Wm. Moellering's Sons, Fort Wayne, Ind.
Mordt, H. J., J. W. Rollinson, Detroit, Mich.
Moore, S. P., The Builders Material Co., Cedar Rapids, Ia.
Morrisey, J. E., Continental Clay Co., Canton, Ohio.
Morris, Mrs. Frances L., Ironclay Brick Co., Columbus, Ohio.
Moulding, J. M., Thos. Moulding Brick Co., Chicago, Ill.
Moulding, Thos. C., Thos. Moulding Brick Co., Chicago, Ill.
Mumford, L. H., Central Refractories Co., Columbus, Ohio.
Murray, Gordon, Harris Murray Co., Cleveland, Ohio.
Murphy, Geo. C., L. J. Bolster Co., Inc., Louisville, Ky.
Newland, E. R., Builders Supply & Specialty Co., South Bend, Ind.
Nicholson, J B., Banfield Clay Co., Irondale, Ohio.
Nowell, A. S., B. Mifflin Hood Brick Co., Memphis, Tenn.
O'Grady, Charles V., Bonner & Marshall, Chicago, Ill.
Ormiston, Wm., Hocking Valley Products Co., Columbus, Ohio.
Owens, Francis T., Ridgway Brick Co., Watsontown, Pa.
Owens, Mrs. F. T., Watsontown, Pa.
Parry, Robert E., Parry Brick Co., Boston, Mass.
Parsons, Walter D., Keystone Brick Co., Watsontown, Pa.
Peterson, P. E., Los Angeles Pressed Brick Co., Los Angeles, Calif.
Pierson, Chas. V., Duluth Builders Supply Co., Duluth, Minn.
Pipkorn, Frank A., Norman J. Pipkorn, Milwaukee, Wis.
Pipkorn, Norman J., Norman J. Pipkorn, Milwaukee, Wis.
Plumb, E. F., Streator Brick Co., Streator, Ill.
Poston, W. I., Poston Brick Co., Attica, Ind.
Price, Carl W., Terre Haute Vit. Brick Co., Terre Haute, Ind.
Puddington, Geo., Wadsworth Brick & Tile Co., Wadsworth, Ohio.
Pugh, W. J., Jr., Builders Material Co., Cincinnati, Ohio.
Queisser, R. L., Jr., R. L. Queisser Co., Cleveland, Ohio.
Rainey, L. B., Fallston Fire Clay Co., Pittsburgh, Pa.
Ramsay, John D., Kane Brick & Tile Co., St. Marys, Pa.
Randall, Theo. A., Clayworker, Indianapolis, Ind.
Reid, A. S., A. S. Reid & Co., Philadelphia, Pa.
Renard, C. J., F. Hurlbut Co., Green Bay, Wis.
Repp, Geo. W., American Face Brick Association, Chicago, Ill.
Rhodes, C. H., Sharon Brick & Clay Co., Sharon, Pa.
Richards, B. H., Jr., Richards Brick Co., Edwardsville, Ill.
Richard, Wm. N., U. S. Brick Co., Tell City, Ind.
Roberts, Ernest C., The Brick Homes Bureau, Cleveland, Ohio.
Robertson, James G., Bay State Builders Supply Co., Cambridge, Mass.
Robertson, J. M., Brownston, Ind.
Rodgers, Eben, Alton Brick Co., Alton, Ill.
Rogers, A. J., Rogers & Co., Boston, Mass.
Rollinson, J. W., J. W. Rollinson, Detroit, Mich.
Rosenberg, H. H., Brick & Clay Record, Chicago, Ill.
Rose, Jay S., Schuyler Rose, South Bend, Ind.
Ruehle, Geo. S., Reiner Material Co., Chicago, Ill.
Ryttenberg, I. A., Sumter Brick Works, Sumter, S. C.
Samuel, C. B., Lookout Paint Mfg. Co., Chattanooga, Tenn.
Sawyer, Geo. B., Marsh-Murdoch Co., Cincinnati, Ohio.
Schaal, H. B., Hocking Valley Fire Clay Co., Nelsonville, Ohio.
Schario, E. J., Mapleton Clay Products Co., Canton, Ohio.
Schlake, Wm., Illinois Brick Co., Chicago, Ill.
Sharpless, S. F., Jr., Speakes Co., St. Paul, Minn.
Shoemaker, W. A., Indianapolis, Ind.
Shelley, T. Z., Brooklyn Brick Co., Brooklyn, Ind.
Shelley, Mrs. T. Z., Brooklyn, Ind.
Shriver, B. H., Poston Paving Brick Co., Crawfordsville, Ind.
Shorey, D. C., D. C. Shorey Brick Co., Cincinnati, Ohio.
Sickel, R. L., Bonner & Marshall Brick Co., Chicago, Ill.
Sleeper, J. S., Hollow Building Tile Association, Chicago, Ill.
Sloan, N. H., N. H. Sloan, Paterson, N. J.
Smith, A. V., Streator Brick Co., Streator, Ill.
Smythe, H. A., Wisconsin Brick Co., Madison, Wis.
Smogor, John K., A. Smogor & Sons, South Bend, Ind.
Sohm, F. C., Colonial Brick Co., Detroit, Mich.
Spaulding, H. M., Boston, Mass.
Sprague, L. W., McArthur Brick Co., McArthur, Ohio.
Spencer, Ralph, Dresden Brick Co., Detroit, Mich.
Stamm, Gordon, Builders Material Co., Cincinnati, Ohio.
Staples, Guy D., Staples-Hildebrand Co., South Bend, Ind.
Steele, W. B., S. A. Morman & Co., Grand Rapids, Mich.
Steinhoff, F. L., Brick & Clay Record, Chicago, Ill.
Stevens, Douglas F., Acme Brick Co., Danville, Ill.
Stevens, Mrs. D. F., Danville, Ill.
Stevens, Frederic B., F. B. Stevens Co., Detroit, Mich.
Stewart, E. A., Stark Brick Co., Canton, Ohio.
Stewart, H. D., Binghamton Brick Co., Syracuse, N. Y.
Stilz, Fred D., Irvington Coal & Lime Co., Indianapolis, Ind.
Stoner, John M., Cincinnati Builders Supply Co., Cincinnati, Ohio.
Stoner, Mrs. John M., Cincinnati, Ohio.
Story, E. S., U. S. Lbr. & Supply Co., South Bend, Ind.
Stratton, Chas. C., Alumina Shale Brick Co., Bradford, Pa.
String, S. W., S. W. String Co., Philadelphia, Pa.
Sullivan, Jos. P., Wisconsin Lime & Cement Co., Chicago, Ill.
Supple, G. J., Western Brick Co., Danville, Ill.
Swan, Theodore H., Rochester, N. Y.
Taylor, Jas. C., Louisville, Ky.
Thomas, E. M., Hay Walker Brick Co., New York City.
Tongue, James, A. S. Reid & Co., Philadelphia, Pa.
Tuller, Ralph W., Reliance Brick Co., Des Moines, Iowa.
Tuller, Mrs. R. W., Des Moines, Iowa.
Turpen, John P., Pursell Co., Cincinnati, Ohio.
Van Etten, W. G., H. D. Conkey & Co., Mendota, Ill.
Virtue, Wm. D., Cox & Co., Newark, N. J.
Van Roo, Ralph, Wis. Face & Fire Brick Co., Milwaukee, Wis.
Van West, Clinton E., Wheeler & Van West Co., Bridgeport, Conn.
Varney, Wm. P., Hydraulic-Press Brick Co., Chicago, Ill.
Walts, S. W., River Coal & Supply Co., New Albany, Ind.
Waugh, J. M., Poston Paving Brick Co., Crawfordsville, Ind.
West, E. A., Fredenburg & Lounsbury, New York City.
West, Wm. P., Moores-Coney Co., Cincinnati, Ohio.
Wheeler, Burt T., Burt T. Wheeler Brick Co., Chicago, Ill.
Wheeler, Mrs. Burt T., Chicago, Ill.
White, H. F., Hocking Valley Products Co., Columbus, Ohio.
Whitney, W. P., Springfield Pav. Brick Co., Springfield, Ill.
Wiggins, James M., Ironclay Brick Co., Shawnee, Ohio.
Wilde, L. G., Cincinnati Builders Supply Co., Cincinnati, Ohio.
Williams, F. Graham, F. Graham Williams Brick Co., Atlanta, Ga.
Wilson, F. G., F. G. Wilson & Co., Philadelphia, Pa.
Winfrey, C. C., Romega Clay Products Co., Rome, Ga.
Wiseman, Homer, West Va. Brick Co., Charleston, W. Va.
Witters, Gordon, Toledo Plaster & Supply Co., Toledo, Ohio.
Witters, R. L., Toledo Plaster & Supply Co., Toledo, Ohio.
Witters, Mrs. R. L., Toledo, Ohio.
Woare, Edward M., Decatur Brick Mfg. Co., Decatur, Ill.
Wood, Walter P., Best Brick Co., Evansville, Ind.
Wortley, A. C., Puritan Brick & Tile Co., Detroit, Mich.
Wray, John, Waldo Bros. & Bond Co., Boston, Mass.
Yancy, Geo. R., R. B. Tyler Co., Louisville, Ky.
Zinn, J. H., Brooklyn Brick Co., Indianapolis, Ind.
Zinn, Mrs. J. H., Indianapolis, Ind.

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Cut Your Drying Time

Reduce Costs **Save Space**

Produce Better Ware

Drying is one of the most important processes in the ceramic industry. To dry evenly, without spoilage the finest ware and do this at the lowest cost is a thing every up-to-date manufacturer is striving to do.

"Hurricane" Dryers are doing these things every day for their owners.

One customer says, "We have cut our drying time on large electric insulators from 8 days to 48 hours," another, "We are cutting our sagger costs 50% to 75%."

May we show you the opportunity of savings in your plant?

Mangles **Stove Rooms**

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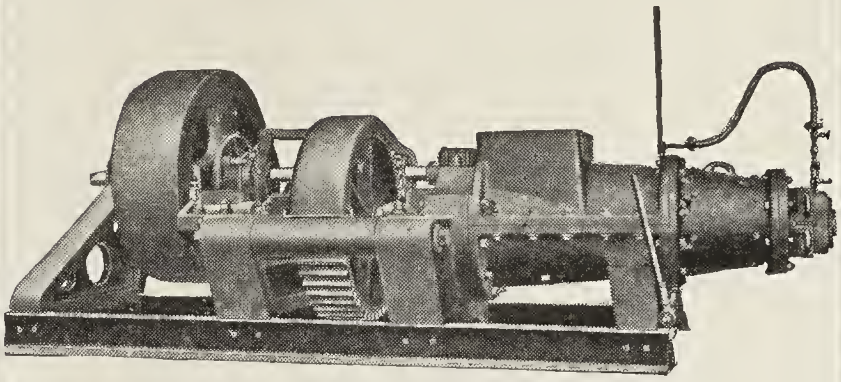
With the Freese system of slow-running gearing, now used on all Freese machines, the desired auger speed is obtained without the use of fast-running gears.

By eliminating all fast-running gears, vibration, noise, power consumption, and repairs are reduced to a minimum.

The Model GC Auger Machine, here illustrated, has but two gears, neither running faster than 125 RPM. Naturally it is a quiet, smooth-running machine—and naturally, too, it is economical in repairs and power.



Model GC Auger Brick Machine

E. M. Freese & Company
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Dependable Machinery of Proven Efficiency

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the right materials to meet existing conditions. The sharp branches of the jungle do not scratch the skin of the tiger, nor do the cold winds of the North injure the polar bear.

Excessive repair expense and long delays do not arise when you apply the proper steel to your machinery parts. Advise us of the conditions under which the parts operate—having had more than 180 years' experience in the iron and steel industry we believe we can be of service in the solution of your problems.

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Without obligation on my part, please mail me your booklet, "Putting the Right Steel on the Job".

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MAIL COUPON TO-DAY

Among Our Advertisers

Details Concerning New Models, Changes in Personel, News Matters, etc., That Our Advertisers Believe Will Interest Our Readers

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E. M. HERR CHOSEN PRESIDENT OF ELECTRICAL MANUFACTURERS' CLUB

E. M. Herr, president of the Westinghouse Electric and Manufacturing Company, was elected president of the Electrical Manufacturers' Club at a meeting of that organization held recently in Hot Springs, Virginia. The organization is composed of the higher officials of electrical manufacturing concerns for the purpose of advancing the electrical industry.

Mr. Herr, a prominent figure in railroad and electrical circles has been president of the Westinghouse Electric and Manufacturing Company for the past twelve years. He was first associated with the Westinghouse industries as assistant general manager of the Westinghouse Air Brake Company in 1898.

* * *

D. I. Wheeler, Cleveland representative of the Morse Chain Co., Ithaca, N. Y., has resigned his position to enter the automotive field. He is succeeded by T. H. Smith, his former assistant.

* * *

B. F. Sturtevant Co., Hyde Park, Boston, Mass., announce that the Philadelphia Division of this company is now located at Thorne and Copeland Streets (near White Horse Pike and Haddon Avenue), Camden, N. J., in a modern daylight building, with Pennsylvania Railroad siding. In this new location they will maintain an up-to-date shop for manufacturing all kinds of sheet-metal work required for the complete installation of Fan Systems including Heating, Ventilating, Drying, Exhaust, and Conveying work. Guards for Machines, Pulleys, and Gears will also be manufactured.

They will carry a large stock of standard equipment, such as Electric Propeller, Monogram, and Planing Mill Fans, Steel Pressure Blowers, Turbo Undergrate Blowers, Blast Gates, etc. In fact, with over four times the capacity, they will be equipped to give their clients prompt and efficient service at all times, and ask a continuance of the patronage which has been given them for so many years.

* * *

G. Bluemel has connected with Tate-Jones & Co., Inc., furnace engineers and builders, and will manage the New York sales district covering New York, New Jersey and New England with headquarters at 50 Church St., New York, N. Y.

Mr. Bluemel is an experienced furnace engineer and was previously connected with the Ferguson Furnace Co. for eight years as chief engineer and vice president. Mr. Bluemel's experience will enable him to readily handle electric or fuel fired furnace and fuel engineering requirements as specialized on by Tate-Jones & Co., Inc.

* * *

LINK-BELT ACQUIRES MESSE & GOTTFRIED CO.

Charles Piez, president of the Link-Belt Company, Chicago, recently announced the purchase of the Meese & Gottfried Co., of San Francisco, Los Angeles, Seattle and Portland.

For the past ten years Link-Belt Company has been distributing its products on the West Coast thru its subsidiaries, the Link-Belt Northwest Company, of Seattle, and the Link-Belt Pacific Company, of San Francisco. The improvement in distributing facilities effected by the consolidation, and the additional manufacturing facilities acquired, should give the rapidly-growing industries of the Pacific Coast highly economical and efficient service.

Link-Belt Company has in its policy of expansion, placed its manufacturing plants and warehouses near its markets, so that users of material-handling and power transmission equipment may be provided with prompt service at low freight rates.

1924 a Year of Promise

THIS IS THE SEASON for inventories. The taking of inventories and the approach of a new year induce in the minds of most of us a tendency to philosophize; we are inclined to look back in reminiscent fashion on the advances and reverses of the past year. Also we ask ourselves what the new year is likely to hold in store for us.

If, now, we thus look back over the developments of 1923, we find that in nearly every section of the clay industry business has been exceedingly good, and that in many individual plants it has been the best within the history of those organizations. In fact in only one department of clay products manufacture, that of the makers of drain tile, could the last year be called, in any large sense, a difficult one. The influences which produced such a general prosperity may be divided into two classes, those originating outside the clay products industry and those produced by conditions within the industry itself.

Business Conditions Were Right

Turning first to the external factors which helped make the year 1923 a banner period for clay products manufacturers, we are impressed first by the tremendous amount of construction work of different kinds which was undertaken. The country's dammed-up need for homes, which has been steadily growing in force for years, finally broke open the flood gates and inundated the building industry. The capacity of building material manufacturers in nearly every part of the country was taxed to the utmost.

Likewise in an allied field of building operations, that of road construction, there was similar activity. State, county and municipal budgets for road and street paving were larger in 1923 than ever before, and the paving brick manufacturers saw to it that they received their share of the resulting business.

Next in importance to the building boom, as an external circumstance affecting clay products manufacture, was the part played by the freight carriers. During the year 1923 the equipment of the carriers was constantly added to and improved, with the result that the present time marks the highest point in transportation efficiency yet reached in the history of the country.

Labor conditions in general were satisfactory. Clay products manufacturers felt to a certain extent the shortage of unskilled labor brought about by immigration restrictions, but were able to operate their plants successfully despite this handicap. A few scattering strikes were recorded, but there was no general labor disturbance affecting the clay industries.

Fuel, which for our purposes means chiefly coal, has been available thruout the year in abundant quantity.

How the Industry Has Advanced

Coming now to a discussion of those circumstances which originated within the confines of the industry, and which were also responsible in large measure for the success of 1923, we find a number of significant considerations Most important of these is the extremely valuable and effective work carried on during the year by the several associations which are identified with various branches of the industry. These highly progressive organizations have carried on extensive programs of publicity and education with results to their memberships that can actually be expressed in terms of dollars and cents. Important research work has been promoted by these same associations, and some useful data have been obtained. There has been a marked increase in the efforts of individual manufacturers to make practical application in their own plants of the results of these and other researches. Standardization and simplification have been applied to nearly every branch of the industry with encouraging results.

In the adaptation of mechanical processes to clay products manufacture important advances have been made. Most encouraging has been the marked tendency of the clay industry to adapt modern methods to old plants, thereby producing better and cheaper products. The possibilities of the mechanical stoker as applied to general burning practice have been clearly demonstrated. The scope of shale planer operations has been so extended that it is now practicable to work banks to a height of 80 feet. From England there has been introduced a new type of tunnel kiln which gives promise of finding profitable application in the plants of this country. And similar other developments must be chronicled in the history of 1923.

From the standpoint of Business Management, it is well worth while to note that an increasing interest has been shown toward cost accounting as evidenced by the installation of improved cost systems by a number of representative concerns.

Let us see now how the several distinct branches of the clay industry have been affected by the external and internal influences enumerated and to what extent each of these branches has participated in the prosperity which the year 1923 brought to clay manufacturers in general.

Common Brick

The common brick industry has had an excellent year. The Hudson River brick manufacturers were so swamped with orders that enormous quantities of brick (approximately 90,000,000) had to be imported. The Common Brick Manufacturers' Association has been very active in the publication and distribution of propaganda of various sorts, including booklets for the information of prospective home builders and a monthly digest of common brick news items, which was regularly sent to a large list of newspapers and magazines. This publicity has attracted a great deal of favorable attention to the products so advertised The association was also responsible for the Cleveland Bricklayers Conference, at which important steps were taken to bring about an increase in the available supply of bricklayers. Further a number of sectional associations were formed to promote the manufacturers' interests.

Face Brick

Face brick production and sales for 1923 have eclipsed all previous records. To the American Face Brick Association must be given the major share of credit for this accomplishment, which is largely the result of a well directed campaign of national advertising, begun some years ago. The Association has spent more than $900,000 in the last four years to tell the building public about the merits of face brick. Other activities of the A. F. B. A. have been a constructive effort aimed at relieving the shortage of bricklayer apprentices and the establishment of an ideal form of contract to aid brick manufacturers in establishing satisfactory dealer connections.

Paving Brick

There has been a much needed improvement in the paving brick industry as a result of the excellent work of the National Paving Brick Manufacturers' Association. The 1923 publicity campaign was well prepared, and should produce the desired results during the coming year.

Hollow Tile

Hollow tile manufacturers have enjoyed a very good year as a result of the general building activity and the splendid advertising and promotional work of the Hollow Building Tile Association. The engineering service work which the field men of the Association have done in many places has been reflected in a more general understanding of the advantages of hollow tile for building purposes. Commendable research work has also been carried on under the direction of the Association.

Roofing Tile

A great increase has been noticeable in the production and use of roofing tile this year. The roofing tile manufacturers recognize the fact that their industry has a great future before it, and have done some very effective publicity work.

Sewer Pipe

The demand for sewer pipe has been to a considerable degree sectional. In the East sales for the year have been very good, but in the West they were somewhat below normal. This industry has two active associations which are doing much to promote a wider use of vitrified clay pipe. Some much needed efforts have been made in the direction of simplification and standardization of pipe sizes.

Terra Cotta

The producers of terra cotta have shared in the prosperity brought about by the building boom, and the outlook for future distribution is good.

Refractories

This industry has had a very satisfactory year. Refractory manufacture was a branch of the clay industry which became inflated during the war period, but we believe that the weeding out of "snowbird" plants has been completed, and that the industry is again on a sound footing. The merger of two large companies in this industry was an outstanding event of the year.

Improvement of quality of product has been noticeable, and efforts toward plant betterment have increased. Thru the Refractories Manufacturers Association, in co-operation with Government Bureaus, the industry is now conducting investigations into the performance of refractory materials in actual practice.

A more practical and valuable method of classifying refractory products according to service was formulated this last year. This service classification should prove of great value to manufacturers and producers alike.

Drain Tile

The drain tile manufacturers are practically the only makers of clay products who have failed to do well this year. This regrettable fact is due partly, but not entirely, to the unsatisfactory financial condition of the farmer, who is the largest user of drain tile. The drain tile manufacturers are themselves much to blame for the unenviable position in which they are now placed, since they have made almost no effort at any time to educate the agricultural population on the value of tiling to increase production. Some active cooperative work is much needed in this branch of the clay industry if it is to prosper in 1924, or in any of the years to follow.

The Past Promises Much for the Future

These, then, are the conditions which are to be found today in the various branches of the clay products industry. On the whole they are very satisfactory and seem to promise much in the way of further progress during the coming year. So far as can be seen at this time the general conditions which have made the year 1923 a prosperous one for the clay industry will remain favorable in 1924.

It will take years for the industry to catch up with the building necessities of the country and that in itself means everything to the building material producers of the clay industry. Paving Brick will undoubtedly be in great demand as a result of the extensive road building programs for 1924 which are now under consideration. Public improvements of all sorts will contribute toward an active demand for clay products of all sorts.

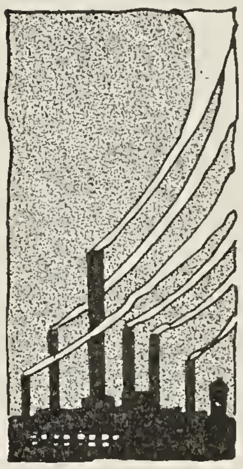
What the Industry Must Do

With these actual conditions as a starting point, and assuming, as may be fairly done, that the factors of labor, transportation, and fuel will continue favorable thruout the next year, we predict that the year 1924 can be made a most profitable one for the clay industry. But the cooperation of all the members of the industry will be necessary to bring this about, and we wish to emphasize this necessity by one or two specific suggestions.

Progress in Manufacturing

Manufacturers must continue to bend every effort toward lowering their costs of production. To accomplish this aim they will find it necessary to make intelligent use of the valuable research data which have been collected thru the efforts of the various clay products associations and independent investigators. These data may be directly applied in the improvement of existing plant practices, and they are of practical value only when so applied.

It seems worth while to direct particular attention to the importance of recent researches in drying and burning. Thousands of dollars have been saved by manufacturers who have put these newly-discovered principles into operation, in establishments already considered to be using the last word in efficient drying and burning methods.



Progress in Distribution

Distribution is just as important as production, and manufacturers must make material progress in telling the buying public about their wares. Every maker of clay products should have an attractively written booklet, describing his product and showing how it has been used in houses, furnaces, roads, and so forth. Such a booklet might contain, also, some photographs of the manufacturer's plant, together with interesting details of the manufacturing processes. This kind of publicity matter could be widely distributed to dealers and consumers, and would prove very effective in promoting sales. Then, to drive home the message of the pamphlet, the manufacturer, particularly in the face brick, common brick and hollow tile divisions, should carry on definitely planned advertising campaigns in the local newspapers of the communities which he serves.

Cooperate in Advertising and Research

If all the members of each branch of the industry can be made to see the advantages of cooperative effort in advertising and research; if they will enthusiastically get behind the activities of their associations; and lastly, if the individual manufacturer will follow up the results of his association's work, and make vital use of them in his own business—then there is every reason to believe that the achievements of 1924 will eclipse to a considerable degree the enviable record of the year which has now closed.

After Four Years—Where Are We?

Bringing Out the Remarkable Accomplishments of the Advertising Which Was Done in the Last Four Years by the American Face Brick Association

Louis Grilk

Western Manager, Geo. L. Dyer Co., Chicago, Ill.

Editor's Note.—This is the talk made by Louis Grilk, western manager of George L. Dyer Co., Chicago, Ill., before the American Face Brick Association in convention at French Lick Springs Hotel, French Lick, Ind., December 4, 5 and 6. The charts published in connection with Mr. Grilk's talk were prepared by Harry L. Baldwin and G. W. Repp, of the American Face Brick Association.

THE ADVERTISING COMMITTEE of the American Face Brick Association insisted that I talk again this year. They even insinuated that a few years ago, at the start of this campaign, we had made certain definite promises, and they more or less said that it was up to me to come down and prove that we had made good, so if some of the things I say do not appear exactly modest, it is because I am going to go along as fast as I can, and try and give you the facts. After all, the thing I am talking about is not only the work of George L. Dyer Co., it is the work of your Service Department, working with the George L. Dyer Co., or the George L. Dyer Co. working with your Service Department. It would take a Philadelphia lawyer to find out which is right.

Advertising Started Four Years Ago

We started this advertising campaign four years ago with the primary object of increasing the use of face brick in house construction, and so we have been hammering away on a few essentials, the beauty, the durability, the fire safety and the economy of face brick houses, and principally on the economy, for your greatest sales resistance has always been, and is, the mistaken notion that face brick houses are too expensive for the average builder to build.

It is a difficult matter in a campaign of this sort to put your finger on definite results. In the case of an individual concern we have definite statistics to show exactly what the advertising is doing. We can see what is happening to sales—whether or not they respond to advertising, and to what extent they respond.

Impossible to Get Exact Figures

I should like to say right here that I wish we did have exact statistics of what has been going on in the face brick business in the last four years. I am not going to apologize for not having anything more definite, because it is impossible to get anything more definite than we have, but I do not fear what the story would show if we had all the facts. We can show an increasingly favorable condition in the industry as a whole. These charts here published will prove that. In the localities where we are able to get definite statistics we can show a substantial increase in the number of face brick houses being built. It is my conviction if we had all the facts, we would show a situation today far beyond the fondest dreams any of us had when we started this campaign; and I base that on the statistics upon which we have been working for the last month. We are able to say without qualification that there is a distinct trend in home building towards face brick, and that this trend has been increasing every year for the last four years.

Advertising Has Been Consistent

But I am getting a little ahead of my story. Our campaign has not been a large one, as advertising campaigns go, but it has been a consistent one. In looking over statistics of trade association advertising recently, I found that our campaign was the most consistent trade association campaign that has been conducted since the war. We have spent practically the same amount during each of the four years since we started. The expenditures of other associations have been up and down. That has been one of the elements in our success. Continuity is one of the essentials of successful advertising.

The number of inquiries we have received as a result of the advertising has increased every year since we started. I do not mind telling you that 1922 had Dr. Mars and me both worried. It looked too good; we were afraid we might not equal it again; but we passed it in 1923.

Bulk of Literature Is Sold

In one other respect your advertising is outstanding, and that is in the sale of your advertising literature. Dr. Mars and Mr. Hollowell have both touched on that, so I will not go into detail in the matter. I merely want to point out to you that your advertising must at least be partially convincing when approximately 75 per cent. of the advertising material that goes out from your office is not only requested, but paid for. That these advertising booklets are appreciated and respected is borne out by the numerous letters of commendation which you will find in your files in the Chicago office. I think it would be a good thing for all of you men if you made an effort once in a while to go in and see what is going on in your office in Chicago. It is hard to come down here once a year, and in a few minutes try to give you the

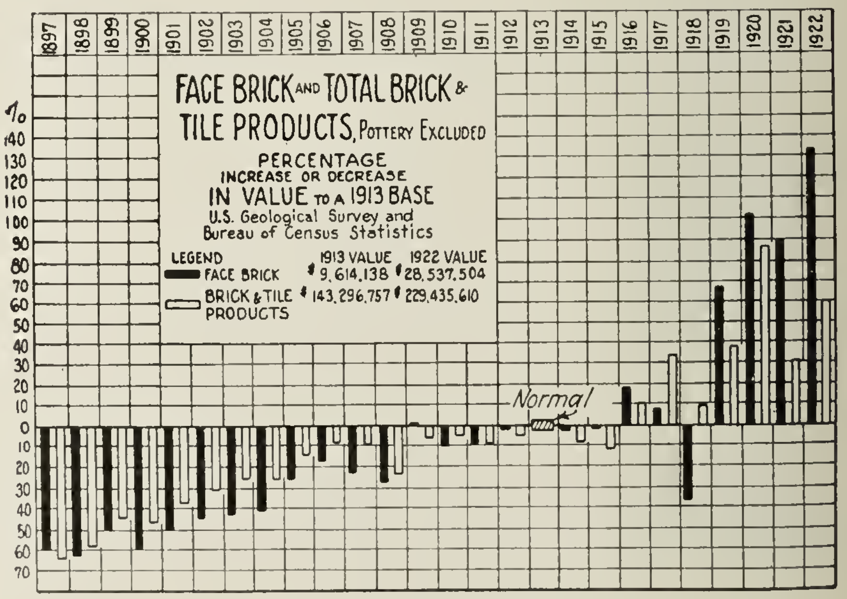


Plate I.

whole story, but if you drop in there and spend a few hours maybe you will believe what you hear when you come to the convention.

Says A. F. B. A. Plans Are Best

We have a lot of evidence as to how this material is being received. I will briefly cite a few recent instances. The editor of the Norfolk & Western Railroad Magazine requested the use of some house plans. They arrived, and after he looked them over he wrote back that they are the best plans he has ever seen, and that he was sure his readers would appreciate his presenting the plans to them.

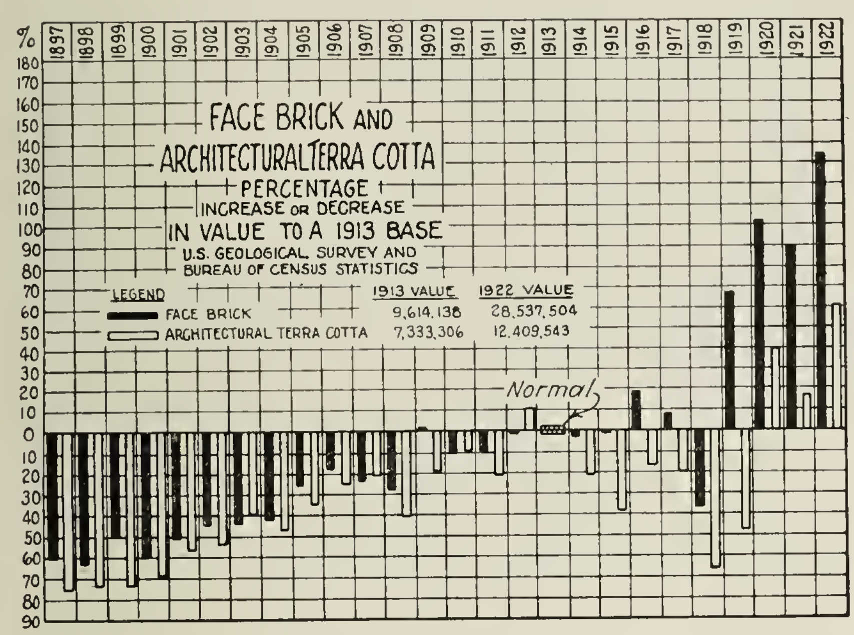


Plate II.

A woman who is conducting a syndicate page on home-building in newspapers in the Southwest writes in that she has seen all the plans that are offered by the various associations, and that the face brick plans are by far the best she has seen, and she has centered exclusively on them.

Literature Broadcasted by Radio

We get the same kind of letters from editors of the home building pages of other newspapers who are using our mat service.

A woman connected with the State College in Washington wrote in and asked permission to review the literature of this Association and broadcast it in their radio service.

I should like to read you a few brief extracts from an article which appeared in "Brick as a Building Material" in the September issue of "The House Beautiful," by Wallace F. Wheeler. I won't take the time to read a lot of it. It is the regular material that Dr. Mars has been handing out in one form or another. But here is a paragraph I want to read: "In enumerating the causes for the increased popularity of brick, it would not be fair to omit the service which the brick manufacturers themselves have been rendering. Realizing that in order to secure the wide use of their materials it was important to inform architects and home builders as to the desirability of brick, different manufacturers have been for years engaged in presenting the possibilities of brick in their most alluring form. These efforts have not been in vain, and now we see the fruition of this work, and the popular appreciation of brick's possibilities."

"Pencil Points" Commends Advertising

Here is an extract from a letter "Pencil Points" got from one of its readers about our architectural advertising: "As an admiring reader of 'Pencil Points,' I consider the advertising on page 53 of the November number the best appearing because of its simple but absolutely realistic character in delineation. It does just what advertising should do—it tells the truth."

Right here I should like to digress for a moment. We might have had greater results to show you if we had been willing to say just a little bit more about our product than we knew was the truth. But from the beginning, not only in the literature, but in the advertising copy that has gone out, we have stuck strictly to the facts in the case. We never have to apologize for a line that goes out over the American Face Brick Association's signature, and you don't have to apologize for it. We have made an effort to keep the advertising and the literature strictly in line with the quality of the product we are presenting, and we have tried to appeal only to people with whom we had some chance of doing business when they responded to our advertising.

Study Charts Here Presented

But so much for bouquets. Now let us look over a few charts of the brick industry, and I have only time here to touch rather briefly upon a few high spots. These charts will be reproduced sometime in the near future and sent to every member of this Association, and I believe it is going to be worth while for every man when he gets this series of charts not just to read the article and put the little circular in a pigeonhole in his desk, but to sit down and consider the significance of those charts, and even further, to consider these charts in the light of the experience of his own manufacturing plant.

Growth of Face Brick Business

The first chart (Chart I) shows the relative growth of the face brick business within the clay products industry. The black line is the face brick line; the shaded line is the line for the entire industry. 1913 is normal, and these lines show the decrease below the value of the 1913 output and these others show the increase above the value of the 1913 output. Please bear in mind that this chart deals with the value of products sold and not with production. We go along without any great fluctuation one way or the other, until we come to the war years and those that followed. Since the war face brick has steadily been making greater progress than the clay industry as a whole.

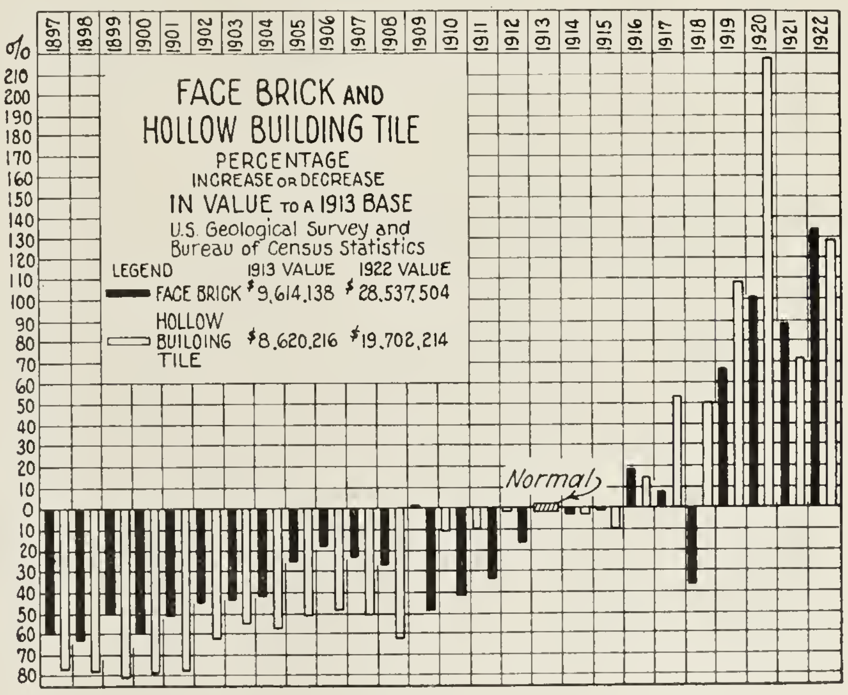


Chart III.

The value of the output of the industry as a whole has increased in the last four years from 35 per cent. to 55 per cent. above 1913, while the value of the output has increased from 65 per cent. to 134 per cent. over 1913. That shows the relative standing of your business in the clay industry as a whole. It will be worth your while to study this chart.

Compare Value of Face Brick and Terra Cotta

The next chart (Chart II) shows the relative value of the face brick output and the terra cotta output since 1897 and here again, with the exception of a few years, you find they battle along pretty much the same year after year. Since 1913 face brick has made greater and steadier progress than terra cotta. In 1919 the value of the terra cotta output was away below 1913, while the value of the face brick output was 67 per cent. above 1913. The final result is that in 1922 terra cotta reached 55 per cent. above the 1913 normal, while face brick had gone to 134 per cent.

Now we come to hollow tile (Chart III). There is one interesting thing about all these charts. The face brick line has shown more of a gradual tendency in one direction than any of the other clay products. They have been wabbling all over the lot, while face brick has been coming along at a more even gait. From 1917 to 1920, hollow tile has us badly licked. But in 1921 they take a big drop and we pass them, and in 1922 we continue to hold our lead. All of these figures are based on value of output in 1913. In 1922 they show 125 per cent. over 1913 and we show an increase of 134 per cent.

Face Brick and Common Brick

Next is a chart (Chart IV) showing the production of face brick and common brick. We are shifting from value to production now.

Here is common brick. It had its high water mark in 1907 and then went down. Since the war common brick has never approached its 1913 level. Our line is very much the same as the value line. It keeps coming right up and going on, during our four advertising years. In 1919 and 1920 we were below 1913 production; 1921 we came up, and in 1922 we climbed to 70 per cent. above 1913.

The next chart (Chart V) shows the production of face brick, common brick, paving brick and hollow tile since 1905, except that the hollow tile figures begin with 1918. There were no production figures available on hollow tile prior to that year. I will not detain you with a discussion of this chart, for it shows much the same story as the preceding charts. The chart will explain itself.

Face Brick Beats Cement

I might state that these charts are all based on figures from the reports of the U. S. Geological Survey and the United States Bureau of Census; they are all based on government official figures. The lumber statistics are based on reports of the U. S. Forestry Service and the U. S. Bureau of Census.

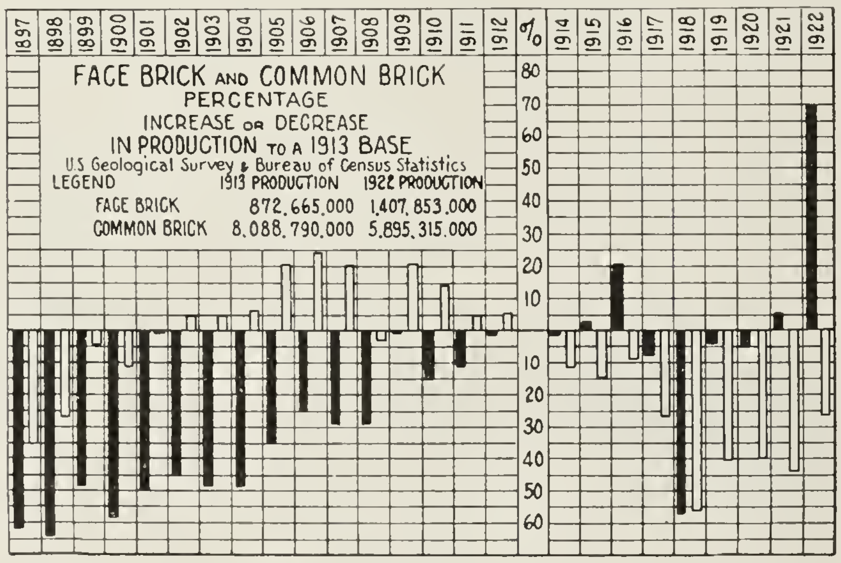


Chart IV. Black Lines Are Face Brick, White, Common Brick.

Now we come to the chart (Chart VI) that is the eye-opener of the lot. We have all thought that cement has been the big boy in the building material family. He has, but of course his greatest growth was before the year 1913. But I was surprised, and everybody I have seen around the brick office was surprised to see that cement in 1922 reached 20 per cent. over normal, the 1913 normal basis, against our 70 per cent. over normal.

Future Competition Not Lumber

Then we come to the lumber industry (Chart VII). The lumber figures are from the Forestry Service and the Bureau of Census.

Lumber reached its high water mark in 1909. It went down then and has never come back since. Your future competition will not be with lumber. The price of lumber is only a small factor in the cost of lumber. Southern pine has already passed the peak of its production. The wood of the future is coming from the Inland Empire and the Pacific Coast.

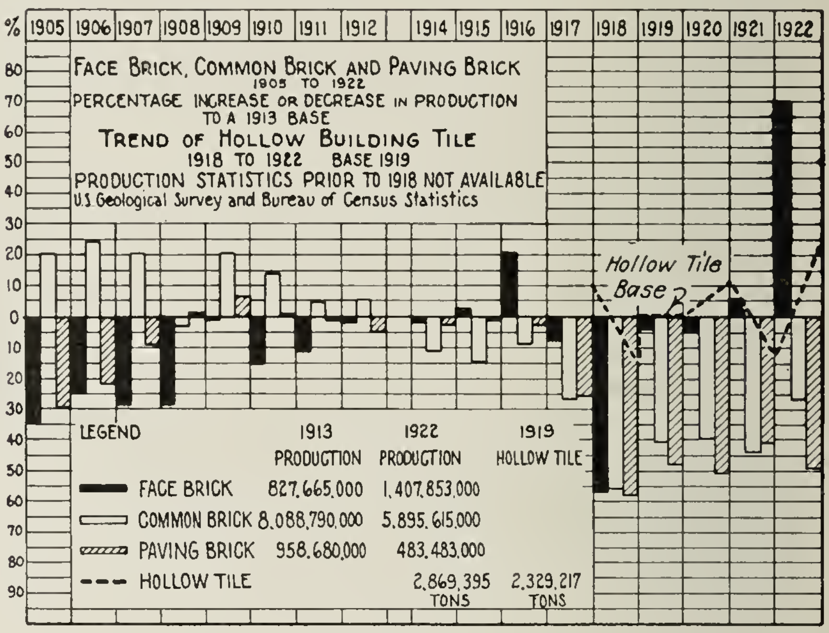


Chart V.

1916 was the biggest year of face brick production up to 1922, and in 1922 you exceeded 1916 by 43 per cent. 1922 now becomes the standard for the future. The dotted line in Chart VII was put in to indicate what might have been a normal increase line if we had gone on steadily from 1904 to 1922, instead of by jumps. It is very interesting to note, so far as statistics are now available, that the line will not be more than one or two per cent. off for 1923. From the production figures of Association members which we have available, it is evident that you are going to go somewhere between 12 and 15 per cent. over the mark set for the year 1923.

Try to Get Actual Figures on Homes Built

I wanted to supplement these charts and try to show specifically what the advertising campaign has been doing, for, as I said before, the advertising campaign was waged primarily to stimulate home building.

When this subject was first assigned to me, I asked some of the boys in the office to obtain for me statistics showing the number of stucco, frame and brick houses built since 1913, year by year. These figures were to be gotten from several cities. We selected Evanston, Oak Park and Riverside (suburbs of Chicago), as being representative and were able to obtain some figures. There is no uniformity in the way various cities record their building permits, no uniformity even in the same offices. Each clerk takes care of it as he pleases. The figures we obtained were therefore disappointing, but may be interesting. What we wanted to get was the percentage of face brick construction before the war and since the war.

Face Brick Homes Increase

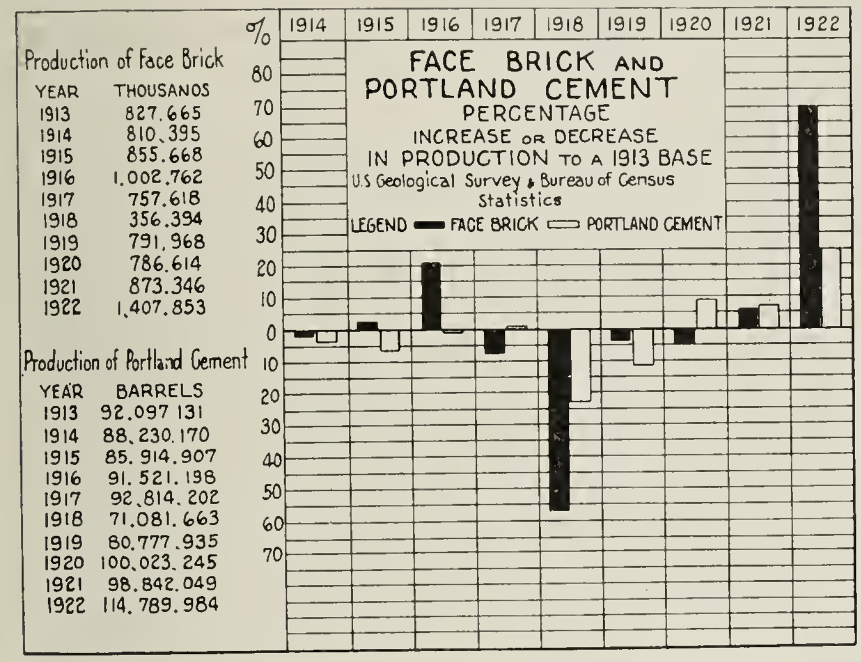
In Oak Park during five years before the war, 9.7 per cent. of the houses were built of face brick. From 1919 to September 1, 1923, 33.4 per cent. of the houses built were of face brick, a 300 per cent. increase.

In Evanston the percentage went from 22.5 per cent before the war to 33.9 per cent. after the war. In Riverside from

13 per cent. to 35 per cent. In Wilmette, the first figure we could get was 1919, and in that year it was 45 per cent. From 1920 to 1923, the figure varied from 52 to 58 per cent. In Highland Park, 1921 was the first figure, which was 11 per cent.; and in 1923 it was 34 per cent. In Winnetka it was 34 per cent. in 1920, and 49 per cent. in 1923.

Figures Not Available

From there we went to Indianapolis, and it would have been about a six months job to get what we wanted, so we came back home. In Milwaukee we could get nothing, and in Louisville the records were about as illuminating, except that the commissioner said there seemed to be a craze for brick houses on at this time. Detroit and Columbus we had about the same situation. The Detroit statistics did not give us what we wanted. The clerks in the office said, however, that wherever brick or stucco is specified by ordinance brick was almost invariably used; and from the statistics which we could obtain we found that brick and tile have been showing a steady increase from year to year.



Production of Face Brick

YEAR	THOUSANDS
1913	827.665
1914	810.395
1915	855.668
1916	1.002.762
1917	757.618
1918	356.394
1919	791,968
1920	786.614
1921	873.346
1922	1,407.853

Production of Portland Cement

YEAR	BARRELS
1913	92.097 131
1914	88.230.170
1915	85. 914.907
1916	91. 521. 198
1917	92.814. 202
1918	71.081. 663
1919	80.777.935
1920	100.023. 245
1921	98.842.049
1922	114. 789. 984

Chart VI.

What The Charts Show

As I have said, it was pretty bad luck to scent a story and not be able to get the facts. The facts are there; I have no doubt about it, because you can see the increased use of face brick in house construction wherever you travel. What we wanted however, were definite figures instead of a lot of generalities.

Now what is the significance of these charts and these statistics that I have been giving you: What do they show? **In the first place, they show that face brick is growing faster than the clay industry itself. And in the second place, they show that face brick is growing faster than your two chief building material competitors, lumber and cement.**

Many Plants Switched to Face Brick

But there is one still more significant fact. You all know that in the last few years a number of common paving and fire brick and tile plants have been converted into face brick plants. The result of this increased demand for face brick has been that you have absorbed the production of those plants without having your prices demoralized. What would have happened if the market had not been increased. The answer is, of course, a matter of conjecture.

We do know what happened in the year 1923 in the lumber business. When the year opened up it looked like a prosperous building year. Small portable plants which are always waiting to go to work in the lumber business started in all producing sections, with the result that by the middle of the year the lumber market was absolutely demoralized. I do not mean that figuratively. One of the dumping grounds was Chicago. Someone would dump five cars of 2x6—16s in the market, and down went that item. Next day some other mill would dump five cars or ten cars of some other item, and demoralize the market on that. The result was that in the lumber market last summer there was not any such thing as a lumber price. It was whatever any buyer felt like offering you.

Face Brick Not Yet at Peak

In the case of face brick, you had an increased production and an increasing demand. In lumber, you had the increased production and a receding demand.

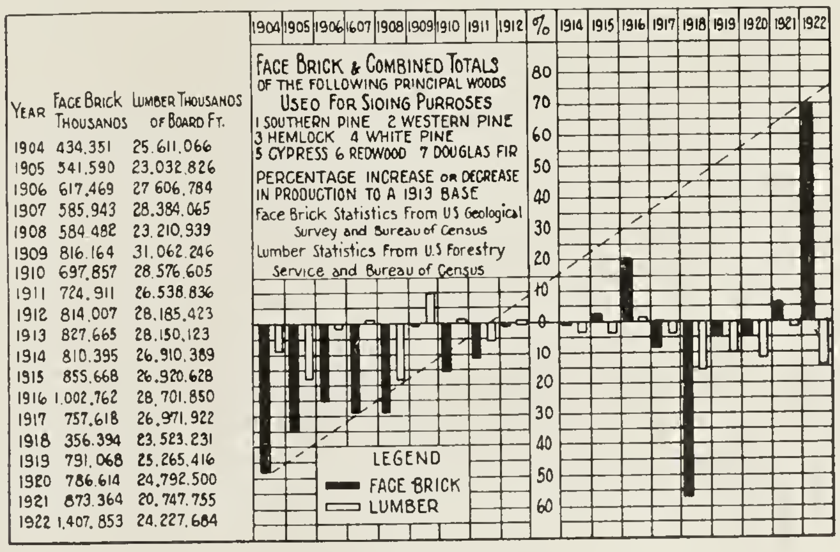
Now just a word about the future. Has face brick reached its peak? Not yet. We already know that 1923 will be better than 1922. The trend toward face brick is a logical trend. The situation in the lumber business, the increased knowledge about face brick, everything is working in your favor. When we urge people to build brick houses we ask them to do a thing that is economically sound, and more and more people are beginning to believe so. We have overcome some of the prejudices against face brick in the generation in which these prejudices grew up. Future generations of home builders will know the facts not only from our advertising, but also from the word of mouth advertising by the people who have built face brick houses.

Things are coming our way. If we play the game they will continue to come our way. This is no time to let up. The more we do for the industry while it is in a prosperous condition, the less we will feel the slump when it comes, and you know it is coming, because our business follows the general trend of the business cycle. The greater the percentage of face brick houses, the less will we be affected when business drops off.

Wants Appropriation Increased

I believe that you ought to increase your appropriation by $50,000 to $100,000. I believe you would cash in on the additional expenditure a great many times over. Conditions are favorable for you to increase your sales to home-builders, and growing more favorable each year. The more energy you put into developing this market the sooner will you increase your sales in it.

It is difficult to understand why any manufacturer of face brick today is not a member of this organization, if he knows what this organization has done and is doing. The men who come into this Association now are coming into a live, growing organizataion. Your overhead is all taken care of, and the contributions of the new members will enable you to do more publicity work, and establish your industry still more firmly. The men who join now do not even take a chance. You men have demonstrated that by proper cooperative effort you can raise the standing and prosperity of



YEAR	FACE BRICK THOUSANDS	LUMBER THOUSANDS OF BOARD FT.
1904	434.351	25.611.066
1905	541.590	23.032.826
1906	617.469	27 606.784
1907	585.943	28.384.065
1908	584.482	23.210.939
1909	816.164	31.062.246
1910	697.857	28.576.605
1911	724.911	26.538.836
1912	814.007	28.185.423
1913	827.665	28.150.123
1914	810.395	26.910.389
1915	855.668	26.920.628
1916	1.002.762	28.701.850
1917	757.618	26.971.922
1918	356.394	23.523.231
1919	791.068	25.265.416
1920	786.614	24.792.500
1921	873.364	20.747.755
1922	1,407.853	24.227.684

Chart VII.

your industry in spite of a lot of petty obstacles that small-minded government officials keep sprinkling around in front of you as you go along.

So, "After Four Years, Where Are We?" In the first place, we have done the hardest part of the job. We have turned the tide in our favor, we are on our way, and if we do not lose our nerve, there is nothing in the building material field that will stop us.

There is one thing I sincerely hope, and that is that along with these material things there have come to you gentlemen a greater confidence in and a greater respect for the business in which you are engaged.

Manufacturer-Dealer Contract Adopted by A. F. B. A.

Editor's Note:—The following manufacturer-dealer contract form was adopted by the American Face Brick Association and the Face Brick Dealers' Association, as an ideal form. It grants exclusive sales rights to a dealer in certain specified territory. When finally presented to the face brick manufacturers the contract form will be somewhat changed in appearance.

This form is distinguished from another form, also adopted, which is known as a "Form of Purchase and Sales Contract." In this form the first paragraph reads: "The manufacturer agrees to sell the dealer on the following terms and conditions:"

FORM OF EXCLUSIVE SALES RIGHTS CONTRACT BETWEEN A FACE BRICK MANUFACTURER AND A FACE BRICK DEALER

AGREEMENT, Entered into this......day of.............., 19....., between.......................... of ...., ..., County of.............., State of..........., hereinafter referred to as "Manufacturer," and.............., ... of ...., County of ...., State of................, hereinafter referred to as "Dealer."

The parties hereto agree to the following:

1st. The Manufacturer agrees that the Dealer shall have exclusive sales rights for the sale of Face Brick manufactured by it in the following described territory:

That during the period of this contract the Manufacturer will not sell to any other Dealer in said territory, Face Brick manufactured by it. Should the Manufacturer, during the period of this agreement, sell Face Brick to any consumer in said territory, said Manufacturer will pay to said Dealer, the following commission on such sale: .... Under this contract the Manufacturer is not obligated to fill an order unless such order is accepted by it.

2nd. In case of sales of Face Brick, involving architects, contractors and dealers in two or more different sales territories, it is understood that the Dealer's profit shall be divided as follows: One third to the Dealer serving the architect, one third to the Dealer who carries the account, and one third to the Dealer into whose territory the brick is delivered. The Manufacturer shall have the right to decide any dispute involving this principle, and its decision will be accepted as final.

3rd. This contract shall remain in force from........... ....and until the same is cancelled by either party, under the terms of cancellation set forth herein.

4th. This contract may be cancelled by either party upon thirty days' written notice given to the other party. This contract may be immediately cancelled by either party for violation of any of its terms by the other party. The depositing in the post office by registered mail of a notice of cancellation shall constitute a cancellation of this contract. The failure on the part of the dealer to pay for brick in accordance with the terms of this contract shall be sufficient grounds for the immediate cancellation of this contract.

5th. If the Dealer fails to fulfill the terms of payment under this, or other existing contracts, between the Dealer and the Manufacturer, the Manufacturer may defer further shipments until such payments are made, or may at its option terminate this contract. The Manufacturer reserves the right, even after partial shipments on account of this contract, to require from the Dealer satisfactory security for the performance of the Dealer's obligations, and refusal to furnish such security will entitle the Manufacturer to suspend shipments until such security is furnished, or to terminate this contract. The termination of this contract under any of these conditions shall not prejudice any claim for damages the Manufacturer may be entitled to make.

6th. In case of cancellation of this contract for causes other than non-payment, the Manufacturer will deliver all orders accepted by him prior to the date of such cancellation, and furthermore will give to the Dealer...........days in which to complete sales on all jobs on which he has quoted prior to the cancellation of such contract. Provided a complete list of such outstanding quotations, giving name of architect, prospective owner, character of job with name, if any, location of job, and quantity furnished by the dealer to the Manufacturer within............days following the date of such cancellation.

7th. The Manufacturer will promptly mail to the Dealer all general price changes, and information as to any changes which may occur in size, appearance and availability of its Face Brick products.

8th. The prices which the Dealer shall pay the Manufacturer for brick under this contract, are the prices set forth in the price lists submitted from time to time by the Manufacturer to the Dealer.

9th. The Manufacturer shall have the right to cancel or change his prices without notice, provided that it gives the Dealer............days from date of the deposit by the Manufacturer in the mail of the new price list, in which to secure orders on quotations then outstanding, and which cannot be withdrawn. It is understood that the Dealer shall notify the Manufacturer of such outstanding quotations within...........days after the deposit in the mail by the Manufacturer of the change in the Manufacturer's prices. In such notice the Dealer must specify the name and location of such job, name of architect, prospective owner and the amount and character of brick covered thereby.

10th. The terms of payment shall be as follows: ....; the terms of discount, if any, shall be as follows: .... The Dealer is to pay the Manufacturer........per cent. interest on all past due accounts within............days. (This clause does not vitiate the rights of the Manufacturer to cancel this contract for failure to pay in accordance with the terms hereof).

11th. An order from the Dealer to the Manufacturer must set forth the following: Quantity, quality, price, whether bricks are for stock or specific building. In the latter case, character and name of building, if it is to have one, name of architect, general contractor, and brick contractor, approximate date of first shipment, and probable rate of shipment. In case such price is not shown on the order, the price of the Manufacturer in effect at the time of the acceptance of the order will apply.

12th. The Dealer shall have the right to inspect brick on cars, but brick unloaded shall be construed as accepted by the purchaser, and no allowance will be made for shortage or damage accruing in transit. However, if brick are not as ordered by the Dealer, the responsibility and costs shall fall upon the Manufacturer. The Dealer shall not be required to inspect more than the first car on orders requiring more than one car, and the Manufacturer shall assume the responsibility and costs in cases where there is any variation in quality or shade in succeeding shipments. The dealer expressly waives any right to collect shortage or damage accruing in transit.

13th. The Manufacturer agrees to keep the Dealer supplied with a reasonable number of samples. The Dealer will requisition supplies of samples sufficiently far ahead to permit the same to be delivered by local freight, the charges of which will be paid by the Manufacturer. Upon samples specifically ordered by the Dealer, to be shipped by express, the express charges will be paid by the Dealer.

14th. The Manufacturer agrees to prepay telephone calls or telegrams which he may initiate, and the Dealer will pay for telephone calls or telegrams which he initiates.

15th. The Manufacturer shall not be responsible for delays resulting from inability to secure fuel or material for manufacture, from strikes, differences with employes, fires, accidents, casualties, transportation conditions, wars, acts of God, or other causes beyond its control.

16th. All verbal agreements and representations of every nature by the Manufacturer or the Dealer are embodied herein, and if not so embodied herein, are expressly waived.

....
Manufacturer

By ....

....
Dealer

By ....

CANADIANS ANNOUNCE GOOD PROGRAM

The 22nd Annual Convention of the Canadian National Clay Products Association will be held at the Prince George Hotel, Toronto, February 13 and 14, 1924. The annual banquet will be held on the 14th and the speakers will be Hon. Howard Ferguson, Premier of Ontario and Rev. H. J. Dody. F. B. McFarren, manager of the Interprovincial Brick Co., will be toastmaster.

The speakers at the luncheons, which will be held at noon each day will be Mr. Carswell of the Carswell Construction Co. and A. Monro Grier, K. C. The papers arranged for so far are as follows:

Kiln Insulation by a representative of Celite Products Co.

Kiln Bracing by Wm. Burgess, plant manager of the Don Valley Brick Works, Toronto.

The Proper Use of Explosives for Shale by a representative of Canadian Explosives Co.

Plant Haulage by B. F. Townsley.

Refractories for Clay Products Plants by a representative of the Elk Fire Brick Co.

Efficient Use of Pyrometers by a representative of the Brown Instrument Co.

Howells Frechette, Chief of the Ceramic Division, Mines Branch, Ottawa, has been invited to give his impressions of the clay products plants of Canada. Mr. Frechette has just completed an investigation of manufacturing conditions in the various branches of the clay products business. He has visited hundreds of plants in both Canada and the United States.

EASTERN PAVING BRICK MEN BACK COOLIDGE AND MELLON

The fifth annual meeting of the Eastern Paving Brick Manufacturers' Association was held in New York City at the Pennsylvania Hotel on December 11, 1923. It was very well attended and was in every way a most successful meeting. The following officers were re-elected for the coming year:

President, R. L. Winslow; treasurer, R. T. Hutchins; secretary and chief engineer, Wm. C. Perkins. These are the same officers that governed the association for the past five years. It was brought out at the meeting that the yardage shipped in the past year, 1,502,604 square yards, was the largest shipment of any one year since the formation of the association.

Resolutions were adopted expressing profound sorrow for the nation's loss in the death of President Warren G. Harding. President Coolidge and Secretary of the Treasury Mellon were commended in resolutions for the position they have taken regarding the reduction of taxes. Resolutions were also adopted commending the railroads for the efficient manner in which they have handled freight during the past year.

In the evening there was a get-together dinner at the Pennsylvania Hotel, at which brick manufacturers and city and state highway officials and contractors fraternized in a spirit of good fellowship.

New York Hoarding Millions of Second Hand Brick

OF ALL THE EXTRAORDINARY aspects of the current construction situation in New York and vicinity, the hoarding of second hand brick as a foil to the use of foreign brick should the domestic Hudson valley winter supply fail, is both novel and significant, says the Dow Service daily building report for December 15, 1923. One leading wrecker says he has 5,000,000 in storage and there are about 15 such contractors in New York.

Hold Brick for Higher Price

Used brick in storage is counted upon to protect domestic markets against the inroads of foreign brick, according to speculators, who, pointing out the glorification of the despised "Lambies," deformed outcasts of the scove kilns, by architects desiring artistic facade effects, who now buy them as special culls at a special cull price, think that something of the kind will give used brick a higher market value. At any rate, they say, they are holding their brick for the time when second hand brick will have a higher value than they have today.

The building trade discounted too heavily the report last July 21 that wrecking contractors in New York were demolishing structures in this city in volume greatly in excess of the highest previous record. Result: architects and contractors operating on those cleared sites are already calling for brick faster than they can be shipped in.

Big Demand Continues

The wholesale brick market in the week just closed, for example, was entirely sold on Friday. No brick not previously contracted for was available for open sale. 31 barge loads arrived and 36 moved out for unloading and the number of barges lying about the city discharging was reduced in one week from 72 to 66. Only four barge loads were reported en route to this city for arrival December 15 with navigation likely to close on the Hudson River at any time.

* * *

POOR BASE WILL SPOIL GOOD SURFACE

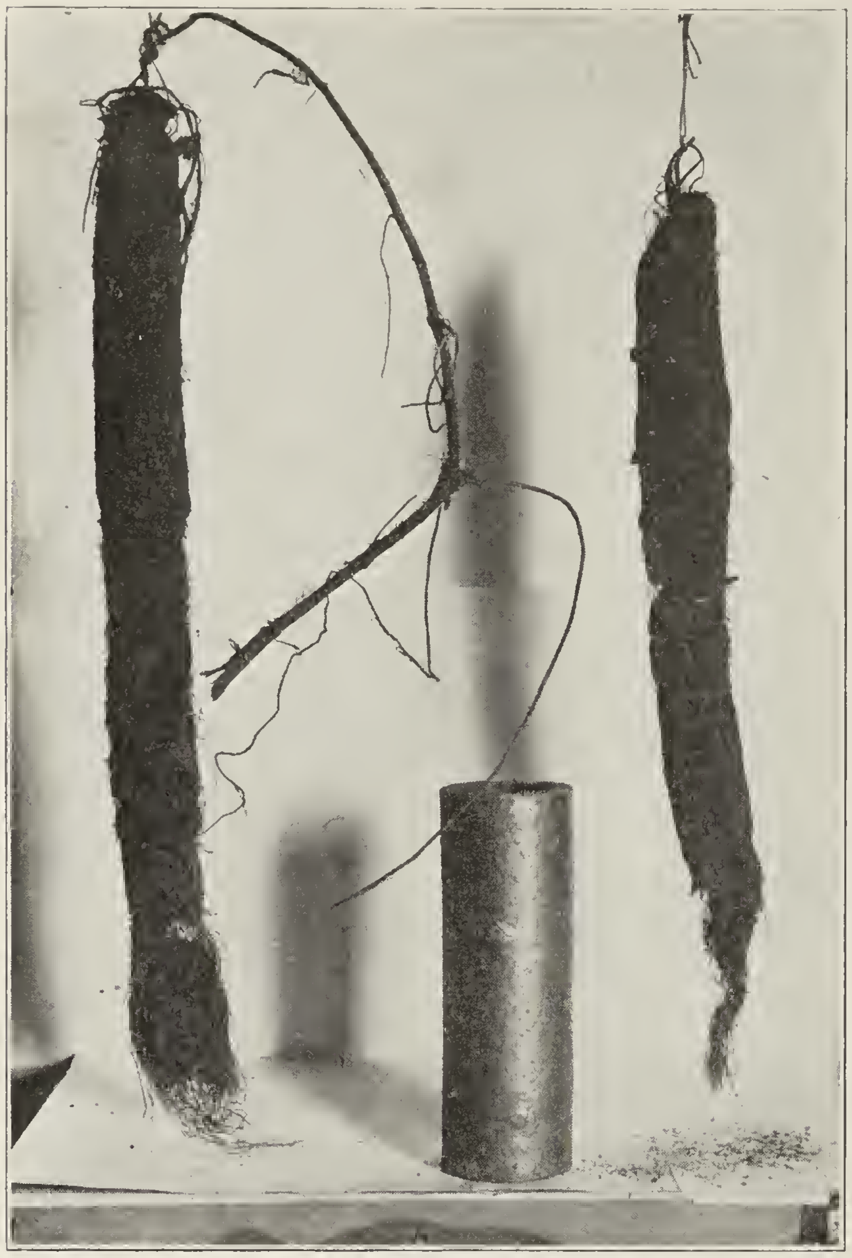
How the trade association can be of practical service to the community as well as to its membership was demonstrated recently in an investigation conducted by the National Paving Brick Manufacturers' Association of a brick road in the vicinity of Bucyrus, Ohio. Attention was called by F. L. Hopley, of the Hadfield-Penfield Steel Co., of that city, to numerous ridges that had appeared in an otherwise good brick pavement. The inquiry showed that the brick itself was not at fault, but that the concrete base was the cause of all the trouble. It seemed that in the final pourings of the day the concrete was allowed to run to a thin edge, and that this thin edge was covered with a similar thin edge when work was resumed the following day.

During hot weather one of these thin edges expanded and slipped up on top of the other, causing the ridge. Of course this happened wherever this condition developed, several times in a mile.

This condition could have been avoided, association executives point out, if the specifications of the association had been observed. These specifications state, essentially, that a bulkhead be placed at right angles to the center of the road, at the end of the working period, and that the concrete base be finished to this point, but not tapered out. When work is resumed, the bulkhead should be removed and the exposed face of the concrete thoroly wet before fresh concrete is placed.

WILLOW ROOTS IN DRAIN TILE

It has happened on some farms that lines of tile drains after functioning perfectly the first few years after their installation, gradually lost their efficiency and finally ceased altogether to carry off the necessary water. The accompanying picture shows one of the causes for this apparent failure of tile drains. Willow or other water-loving trees in the vicinity of drainage lines will invariably send their roots into the tile and eventually fill the tile and stop the flow of water altogether. The picture shows masses of willow roots which have done this very thing and also shows one of the tile from which the roots were taken. The way to overcome this is either to dig up the trees or provide tight joints thru which the roots cannot enter the tile.



How Tree Roots Will Get Into and Clog Up Tile Drains Is Shown Here.

* * *

NOVEMBER BUILDING GAINS 19 PER CENT.

The country's building activities continued their lead over last year thru November, according to F. W. Dodge Corporation. Total contracts awarded during the month in the 36 Eastern States (including about seven-eighths of the country's total construction volume) amounted to $318,828,000. Altho this was a 12 per cent. drop from the October figure, in 27 of these states (for which records were kept last year), there was an increase of 19 per cent. over last November. As in October, the heaviest increase in construction activity was in New York State and Northern New Jersey, which was the only district showing an increase over October. The recorded figures on building volume in October and November indicate an unusually busy winter for the construction industry.

Included in last month's record were the following important items: $158,953,000 or 50 per cent., for residential buildings; $44,457,000 or 14 per cent., for industrial buildings; $36,237,000, or 11 per cent., for public works and utilities; $32,594,000, or 10 per cent., for business buildings, and $24,273,000, or 8 per cent., for buildings devoted to educational purposes.

Total construction started in the 36 Eastern States during the first eleven months of this year has amounted to $3,237,068,000. In 27 of these states the lead over the corresponding period of last year is a little more than 3 per cent.

Contemplated new work reported during the month amounted to $623,704,000, an increase of 10 per cent., over the amount reported in October.

* * *

FREIGHT LOADINGS REACH BIG TOTALS

The following table gives an idea of the enormous amount of freight handled during the past 11 months. It shows loading of revenue freight this year, compared with the two previous years.

	1923	1922	1921
4 weeks of January	3,380,296	2,785,119	2,923,759
4 weeks of February	3,366,965	3,027,886	2,739,234
5 weeks of March	4,583,162	4,088,132	3,452,941
4 weeks of April	3,763,963	2,863,416	2,822,713
4 weeks of May	3,941,386	3,102,124	3,039,234
5 weeks of June	4,977,053	4,153,590	3,808,040
4 weeks of July	3,944,386	3,252,107	2,998,785
5 weeks of August	5,204,532	4,335,327	4,069,765
4 weeks of September ..	4,147,148	3,699,397	3,280,576
4 weeks of October	4,310,994	3,913,046	3,726,405
5 weeks of November ..	4,889,101	4,668,655	3,799,030
Total for year to date..	46,508,986	39,888,799	36,660,582

* * *

HOLLOW TILE MEN MEET IN FEBRUARY

February 7 and 8, 1924, have been set as the days on which the Hollow Building Tile Association will hold its annual meeting. The convention will be held in Chicago at the famous Drake Hotel. The program has not as yet been announced but present plans indicate that the sessions will be taken up for the most part with problems which intimately concern the hollow tile industry. The various committees and the directors will meet at the Drake on February 5 and 6, 1924, two days before the regular meeting.

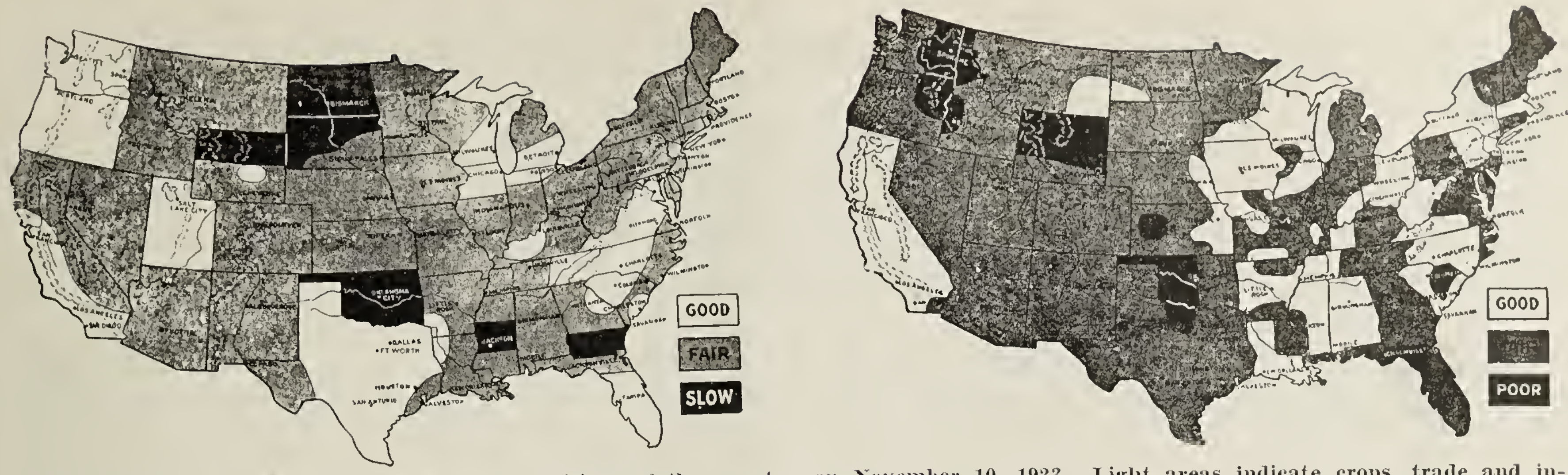
* * *

URGE KEEPING PRESENT ALIEN LAWS

The National Immigration Conference, which met December 13 and 14, at the Hotel Astor in New York, resulted in the first interchange of views by competent authorities representing all phases of American life, on this vital subject which is at present engrossing the attention of business and the nation. The conference resolved itself into a constructive means of placing on record recommendations for an orderly and broad revision of the nation's present immigration laws.

More than 500 persons attended the sessions and included among them were prominent representatives of industry, finance, education and public service.

While the Conference itself took no formal notes and entertained no formal motions, enough occurred at its sessions to indicate that the best thought of industrialists toward a sound national immigration policy lay along the lines of extending the present Per Centum Limit act for a few years, with certain administrative changes to remove injustice and facilitate the operation of the act.



The map on the left shows the general conditions of the country on November 10, 1923. Light areas indicate crops, trade and industrial activities. In the black areas these conditions are lacking. The shaded areas are halfway or "fair". These maps show only actual conditions; prospects are not indicated. The map on the right shows conditions as they were a year ago. These charts are reproduced from the Nation's Business of December 1923

Appointment of an Advisory Commission by President Coolidge under a resolution of Congress, to report thru him to Congress within a limited time was favored. Among the matters to be covered in this report would be immigration and emigration in the light of present domestic and world conditions; requirements of industry, commerce and transportation for labor forces and, insofar as the native supply is adequate, for immigrants generally, and for special groups of immigrants in particular; economic and social assimilability of foreign racial groups; effect of mixture of races upon the virility and social progress of the nation; and practical methods of selecting, distributing and assimilating immigrants.

⁂

3,276 MASONS CAME TO U. S. LAST YEAR

According to figures compiled by the Bureau of Labor Statistics, the northern nations are all filling their monthly immigration quotas. During July and August, the first two months of the present fiscal year, Germany and the British Isles have topped the list with 18,917 and 27,113 immigrants respectively. Encouraging news for the building industry is contained in the following table:

Building Trade Immigrants

	During 12 Months Ending June 30, 1923	During July and August 1923	Percentage of Last Year's Total Coming in Two Months This Year
Carpenters and joiners	12,305	4,661	38
Masons	3,276	1,671	50
Plasterers	503	192	38
Plumbers	1,197	566	48

⁂

WHY CLAY PRODUCTS MUST BE PUSHED

Of considerable interest to clay products manufacturers, in the South especially, is the following item, taken from the news bulletin of the Hollow Building Tile Association:

"The activity of interests pushing cement hollow blocks has recently been brought to our attention. This activity is to cover the entire U. S. but at present is being centered in the southeast. A Chattanooga plant is making 8x5x12-inch tile and has a capacity of 40 tons daily and it is reported that to date none of the tile produced has remained in the yard the required 28 days for seasoning on account of the demand. This plant steam cures and gets 28-day strength in 15 days. The 8x5x12-inch over the country will average about 20 pounds. It is contemplated to construct three plants in Florida located in Jacksonville, Miami and Tampa with daily capacities of 100 tons each. These plants will use a coral rock for their coarse aggregate which is very cheap and light. They claim a test was made and showed a strength of 700 pounds.

"Plants are being promoted in Atlanta, Ga., Knoxville, Tenn., and Montgomery, Ala."

⁂

CANADIAN BUILDING INCREASES 13 PER CENT.

The Dominion of Canada authentic reports of constructional activity for 1923 to date give an increase of 13 per cent. over last year. The different groups or districts are rated as follows in regard to business building: Ontario 47.1 per cent., Quebec 39.2 per cent, Western 10.6 per cent., and Maritime 3.1 per cent. Construction awards this year to date amount to $292,756,800, compared with $259,371,400 during the corresponding period of 1922. Residential building shows a falling off of 6.6 per cent., while business shows increase of 3.4 per cent., industrial 12.4 per cent., and public works and utilities 53.1 per cent. over the same period last year.

Building material prices and the labor situation seem fairly stable, and it is expected that there will be only a slight recession in building costs.

⁂

TRI-CITY BRICK CO. PROSPEROUS

"With a peak production of 1,147,250 brick, shipments of 972,270 and sales totaling 1,110,000 in one month, of this year, the Tri-City Brick Co., Carbon Cliff, Ill., experienced the best month in its history," said Wallace C. Grant, secretary of the corporation.

"We are shipping brick in large quantities to Chicago, Minneapolis and St. Paul, Omaha, Milwaukee, Peoria and Rockford, Ill., La Crosse, Wis., and to a number of smaller communities," said the secretary, "and I look forward to a very active and prosperous year.

"Our production is easily one million brick a month, and it sometimes exceeds that figure. Our daily production never falls below 45,000 brick. At present we are operating ten kilns, and we are about to build an additional kiln. We are employing 50 men at present, and keep busy at our Carbon Cliff location."

The company has recently increased its capital stock from $100,000 to $150,000.

⁂

ANOTHER OHIO COMPANY

The Fairfield Brick Co., of Zoarville, Ohio, has been chartered with an authorized capital of $1,500 to manufacture common brick and drain tile. Among the incorporators are J. W. Buehler.

How to Tie-In with Your Association Advertising

R. R. Shuman
Advertising Counselor, Chicago, Ill.

IN MY LAST article I criticized the brick and clay products manufacturers for failing to capitalize to their own profit, their Association educational publicity which they were paying for.

While that criticism was correct, as applying to the trade in general, some very encouraging exceptions to the general rule have come to our notice, as for instance the striking full-page newspaper ad of the Claycraft Mining and Brick Co. of Columbus, which we reproduce. This ad is one of a series, some small, some large, but all excellent.

I shall appreciate copies of ads of other concerns, sent me care of Brick and Clay Record, for reproduction or reference in future articles on this important subject.

Winter-Building Campaign

Right now, the biggest service a manufacturer can render both to himself and his community, is to educate the people to the advantages of building in winter. All over the country, the large building supply dealers, acting on the advice of the Building Supply News, are running "BUILD NOW" ads in their local newspapers. Brick and clay products manufacturers should cooperate with their dealers by running parallel campaigns in which the practicability of brick building in winter is discussed. The large ad headed 'Brick-Build Now' has been written as a suggestion, with the idea that the manufacturer may clip it out, make any change he wishes, add his name and address, and send the ad to his local newspapers. Other ads will be printed in succeeding issues, in the hope that they may be helpful.

BRICK–BUILD NOW

It will cost less than to wait till you're caught in the Spring rush

You are already converted to the beauty and durability of Brick and Tile as building materials; but may have decided to wait until Spring before you build.

If that's the case, you'll be interested in learning that brick and tile masons have solved the problem of cold-weather construction Except for the bitterest cold weather, they can now work uninterruptedly thruout the winter.

And the work is *done better*, because each workman knows that he must render a full day's work for his day's pay, or he'll find another man on his job who *will* work.

Cheaper, too, because manufacturers, dealers, contractors, architects — all parties to the transaction — are willing to operate on narrow margins in order to stimulate building during their dull season.

What's more, you will avoid a long list of petty annoyances and heart-breaking delays, which nearly always make life a burden to the man who is running a race with them, at the eleventh hour, in the Spring.

Call on us. Let us show you our beautiful products, and how little it costs to build a beautiful new home or remodel an old one.

Name and address of Manufacturer

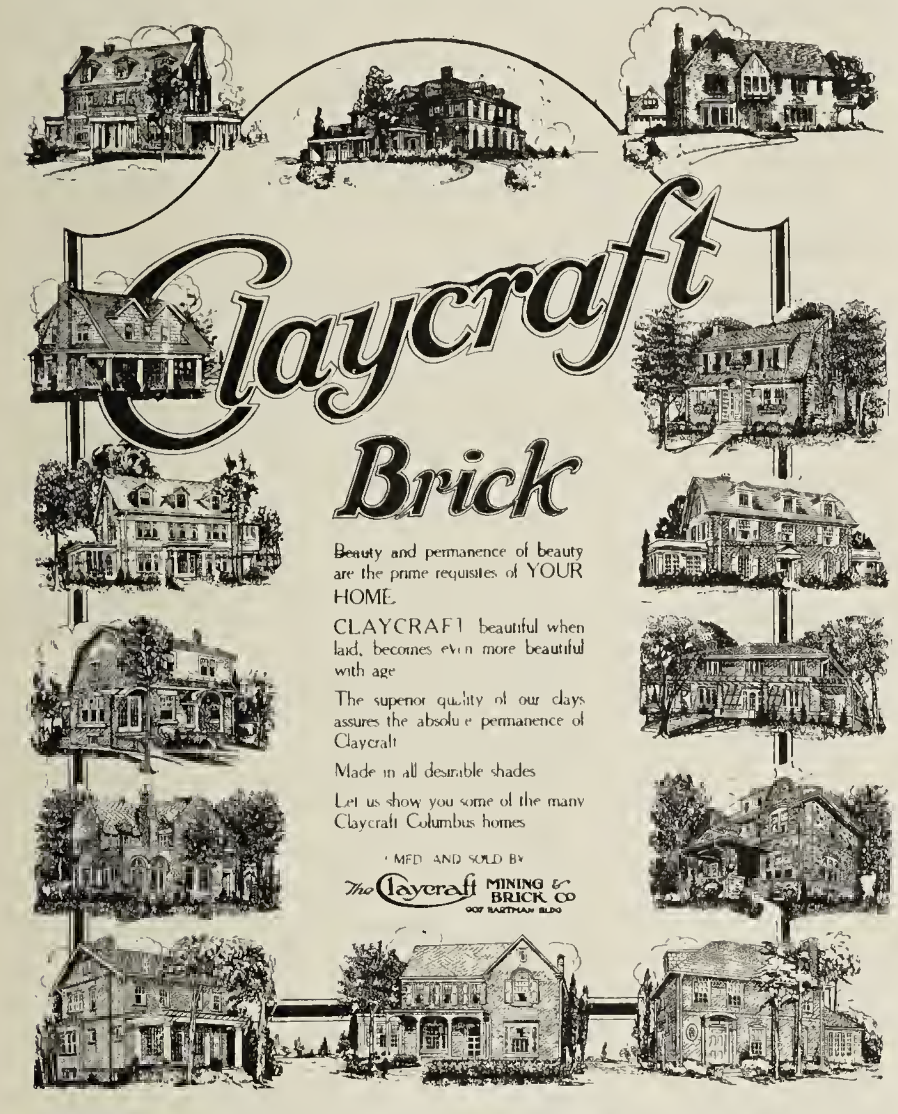
How Local Advertising Helps

The clay products manufacturer who advertises persistently in his local newspapers soon becomes known as an authority on building; and, as such, is consulted by prospective builders, and by architects, contractors and engineers. He is also interviewed by representatives of his local newspapers and his name thus kept prominently before the public.

A case in point is Mr. Howard Frost, president of the Los Angeles Pressed Brick Co. We have before us a clipping from a Los Angeles Sunday newspaper dated November 5—nearly a column in length, telling about Mr. Frost's cross-continent tour and his election to a place on the executive committee and chairman of the West Coast District, of the Refractory Manufacturers' Association, at the recent Colorado Springs convention.

Publicity Is Valuable

In this article Mr. Frost is given the opportunity of talking about his own wonderful plants and their modern equipment.



Beauty and permanence of beauty are the prime requisites of YOUR HOME

CLAYCRAFT beautiful when laid, becomes even more beautiful with age

The superior quality of our clays assures the absolute permanence of Claycraft

Made in all desirable shades

Let us show you some of the many Claycraft Columbus homes

MFD. AND SOLD BY
The Claycraft Mining & Brick Co
907 Hartman Bldg

A Beautiful Brick Advertisement Occupying a Full Page in a Daily Newspaper. Such Publicity Is Bound to Bring Results

Like all other alert business men Mr. Frost recognizes the value of publicity. He doesn't make the mistake of assuming that "everybody knows us, what we make, and where we are"; but keeps everlastingly telling the public about his products and his service.

This broad vision has extended the zone of his operations far beyond his own locality, and he is shipping many of his clay products abroad as well as into a majority of the states of the Union.

Good Will Is Strong Asset

Businesses don't "just grow"—they must be watered, cultivated, nursed, and given every modern encouragement. The clay-products maker who sits back and waits for business to come in is always at the mercy of the buyer, and always beset by competition from more aggressive competitors—nearby or distant. The strongest bulwark that any man can build around his own business, is a solid structure of popular good will. And that good-will is a matter of far too slow a growth if it is made to depend solely upon the merit of the products.

Making high class goods is vital, of course, but letting the people know about them is even more important.

The Convention Box

January 22 and 23—National Paving Brick Manufacturers' Association, Hotel Sinton, Cincinnati, Ohio.

February 7 and 8—Hollow Building Tile Association, Drake Hotel, Chicago, Ill.

February 4, 5, 6, 7 and 8.—American Ceramic Society, Atlantic City, N. J.

February 11, 12, 13, 14, 15 and 16.—Common Brick Manufacturers Association of America, Biltmore Hotel, Los Angeles, Cal.

February 13 and 14.—Canadian National Clay Products Association, Prince George Hotel, Toronto, Ont.

CERAMICS SHORT COURSE WILL BE INTERESTING

The Short Courses in clay working and enameling which are to be held at the University of Illinois, January 14 to 25, offer exceptional opportunities to those interested in any of the many branches of the industries, to hear a corps of experts discuss topics of vital importance to all engaged in the manufacture or use of ceramic wares—whether they be brick, glass, pottery or enameled metals.

21 lecturers and assistants will assist in presenting 33 topics, which include the properties of raw materials, processes of manufacture, and properties of the finished products.

The lectures are arranged so that the interests of those concerned with the manufacture of brick and other heavy clay products do not conflict with the special lectures for potteries and the special lectures for enamelers. The manufacturers of glass wares will find the discussions of refractories and many other topics well worth their attention.

The Short Course was given first in 1913. At first it was devoted primarily to the interests of clay products manufacturers. In recent years the lectures have been arranged for the needs of others. For several years it was held annually, but since 1916 the sessions have been held once every two years. Since its inauguration, ten years ago, the Short Course has been held seven times and the total attendance has been 270 men, who have come from all parts of the country. In 1922 20 states were represented with an attendance of 72 men.

Who attends? An examination of the records show—owners of plants, superintendents, miners of clay, kiln burners, potters, enamelers, editors of technical journals, amateur potters, instructors, geologists, superintendents of glass plants, and so forth.

Programs may be had upon application to the Department of Ceramic Engineering, University of Illinois, Urbana, Ill.

⁂

FIND BRICK 7,000 YEARS OLD

Archeologists have once again had to thank burned clay products for providing them with additional information regarding the history of the ancients. Recent excavations in Mesopotamia have uncovered some finds of remarkable scientific value. The real value of these excavations was determined when a brick, covered with cuneiform inscriptions, was unearthed. The deciphering of the inscriptions revealed the fact that the buildings which were being excavated were the temples of Ishtar and Ilbaba, rebuilt some 7,000 years ago. The brick is now on its way to Chicago, and it is said that this discovery settles at last one of the most troublesome problems of ancient Mesopotamian history.

Thus burned clay again establishes the correctness of the contention of its manufacturers that it is everlasting.

Drilling, Boring and Reaming with the Lathe

Gustav H. Radebaugh

WORK IN THE LATHE is divided into three specific classes: Work between centers, face plate work, and chucking work. The operations of turning, threading, boring and so forth, may be involved in each of these classes.

It is necessary to do many jobs required of the lathe by holding the piece in the chuck. The most common of all chucking jobs is that of holding a bushing as shown in Fig. 1. Newly purchased lathes are not generally equipped with a chuck. The manufacturers of lathes do, however, equip each machine with a countershaft, necessary gears for thread cutting of different pitches, large and small face plate, steady and follower rest, and a tool post wrench. The chuck for the lathe can be selected from a variety of designs. In Plate 1 is shown a collection of the more necessary styles.

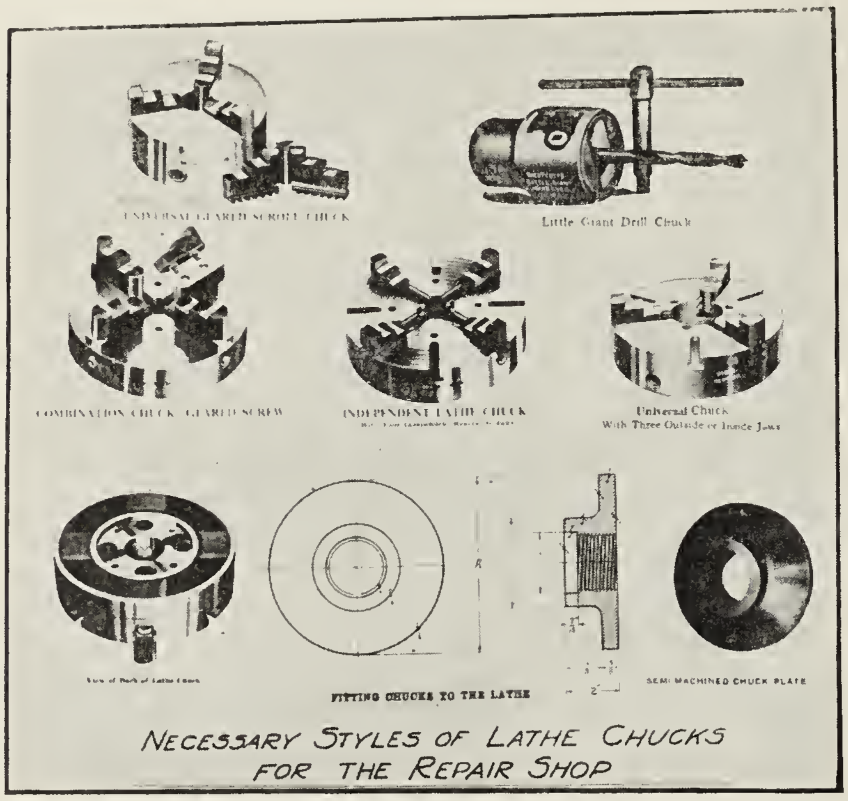

UNIVERSAL GEARED SCROLL CHUCK
Little Giant Drill Chuck
COMBINATION CHUCK GEARED SCREW
INDEPENDENT LATHE CHUCK
Universal Chuck
With Three Outside or Inside Jaws
R
2″
SEMI MACHINED CHUCK PLATE
FITTING CHUCKS TO THE LATHE
NECESSARY STYLES OF LATHE CHUCKS
FOR THE REPAIR SHOP

Plate I.

Three Kinds of Chucks

A reference to this collection will show that there are three distinct kinds: Combination, independent, and universal. The combination, which is the chuck shown in the left of the illustration, is considered by many experienced machine operators to be the most universally used chuck for all around work. There is, however, a question as to its adaptability. It has received the name "combination" because it can be used either as an independent or universal; that is, the jaws may be adjusted one at a time, independent of each other, or they may be adjusted in unison. The independent chuck is shown in the center of the illustration. This style of chuck is the favorite of many mechanics who have had considerable experience in general repair work. Its design is simple and indestructible. A chuck of this type will be found to give service over a long period of years, and when used on general work, from the aspect of economical buying, is the best and cheapest chuck that can be purchased for the lathe.

Fastening Chucks on Lathe

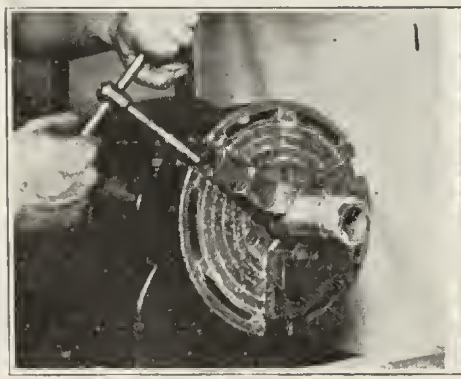
Lathe chucks are held on the lathe with a chuck plate. This chuck plate, as a reference to Plate 1 shows, is threaded so it will screw on the nose of the lathe. When fitting up a new chuck to a lathe it is necessary to machine one of these plates to the size necessary to fit the chuck as well as the nose of the lathe. The cross-section view gives a good idea of the general shape of the casting used for this job. The most convenient way to machine a chuck plate is to clamp the casting on the face plate, bore and thread the hole to the size to fit the nose of the lathe snugly, and then screw it in place on the lathe nose.

It is then faced and turned to size to fit the lathe chuck. To make it possible to center the chuck accurately see that the chuck plate is turned to a size so it can be assembled with a drive fit. The holes are now laid out and drilled; the chuck and plate are then assembled with cap screws. Considerable care must be exercised in doing this job because extreme accuracy is necessary to make the chuck run true when fitted to the chuck plate.

Removing Face Plate

The best way to remove a face plate from the nose of the lathe is shown in Fig. 2. A block of wood is placed on the back ways of the lathe and with the back gears in the lathe is turned backward by hand. The slot in the face plate meeting the block of wood causes the face plate to unscrew.

The same scheme can be applied when removing a chuck by bringing one of the jaws against the block. Face plates or chucks when removed from the lathe should have the threads thoroly oiled and a clean piece of waste placed in the hole to exclude all dirt and grit from coming in contact with the threads. When placing either of these on the lathe wipe the nose of the lathe thoroly and clean the inside threads, as shown in Fig. 3. If this is done all trouble will be eliminated when they are to be removed. Failing to do this is the quick way to make a lathe inaccurate and worthless. It is very severe on a lathe to have a chuck or the face plate stick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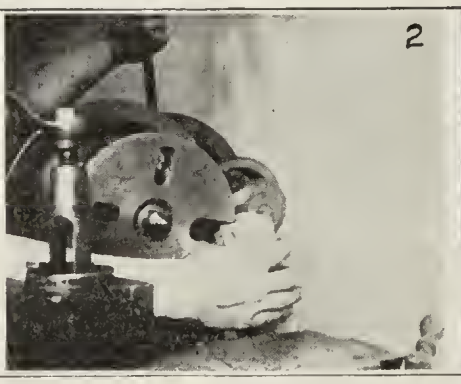
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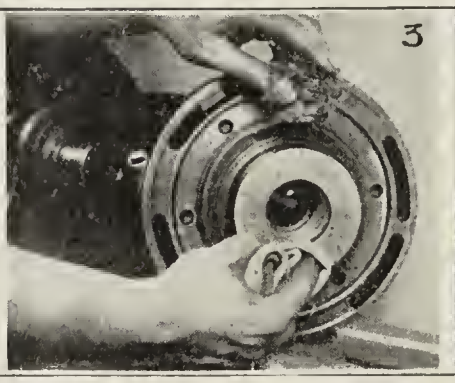
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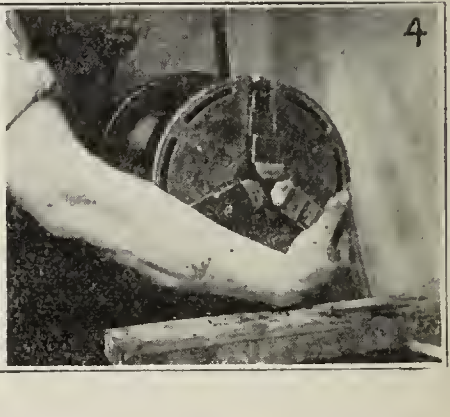
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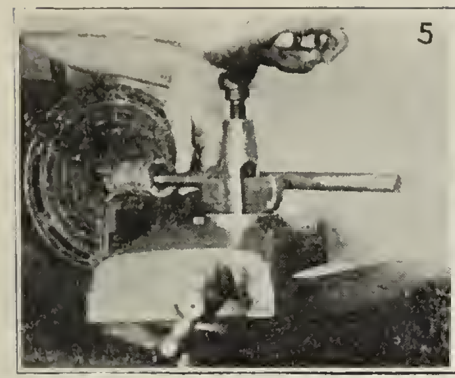
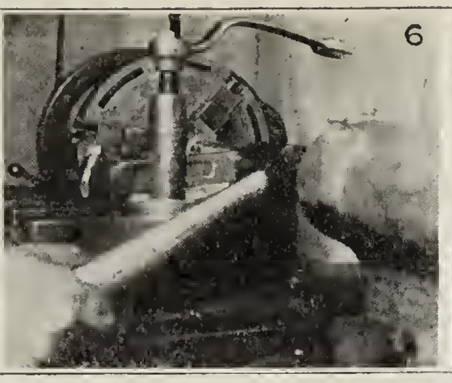
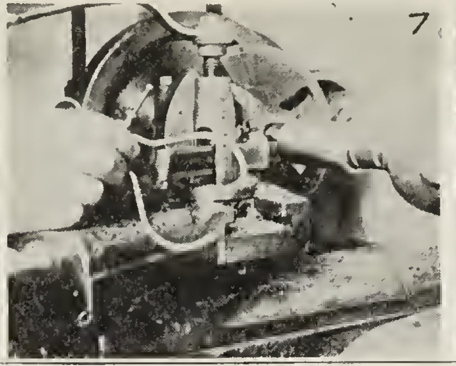
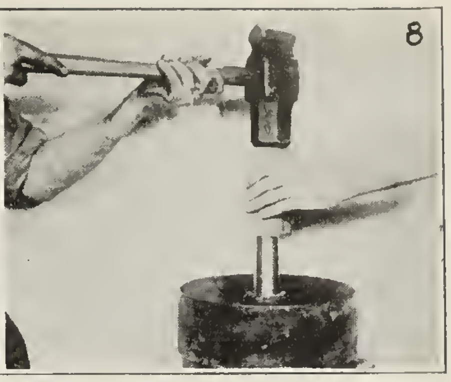








or freeze. If this does happen about the only way it can be removed is by using a long stiff bar as a lever to unscrew the chuck or face plate from the nose.

Locking the Lathe

In doing this the lathe should be locked. This can be done by placing the back gears in when the belt or spindle speed is connected. A few light blows with the hammer on the shank or hub of the chuck plate while the pressure is being applied with the bar will have a tendency to loosen the threads. If this does not bring results the only thing left to do is to heat the metal which houses the threads. This causes the plate to expand and loosen the threads.

Many accidents happen to lathe operators by putting a chuck in place when the lathe is revolving under power. This is a dangerous practice and should be discouraged as there is a big risk of damaging the machine as well as injuring the operator. In Fig. 4 is shown a safe way to do this. Notice in the view the chuck board which is lying on the ways of the lathe. The chuck is lifted from the floor to the board. With the back gears in, the chuck is lifted to the nose of the lathe and is held as shown while the belt is pulled down. This causes the threaded nose to screw into the threaded chuck plate; it should screw against the shoulder snugly.

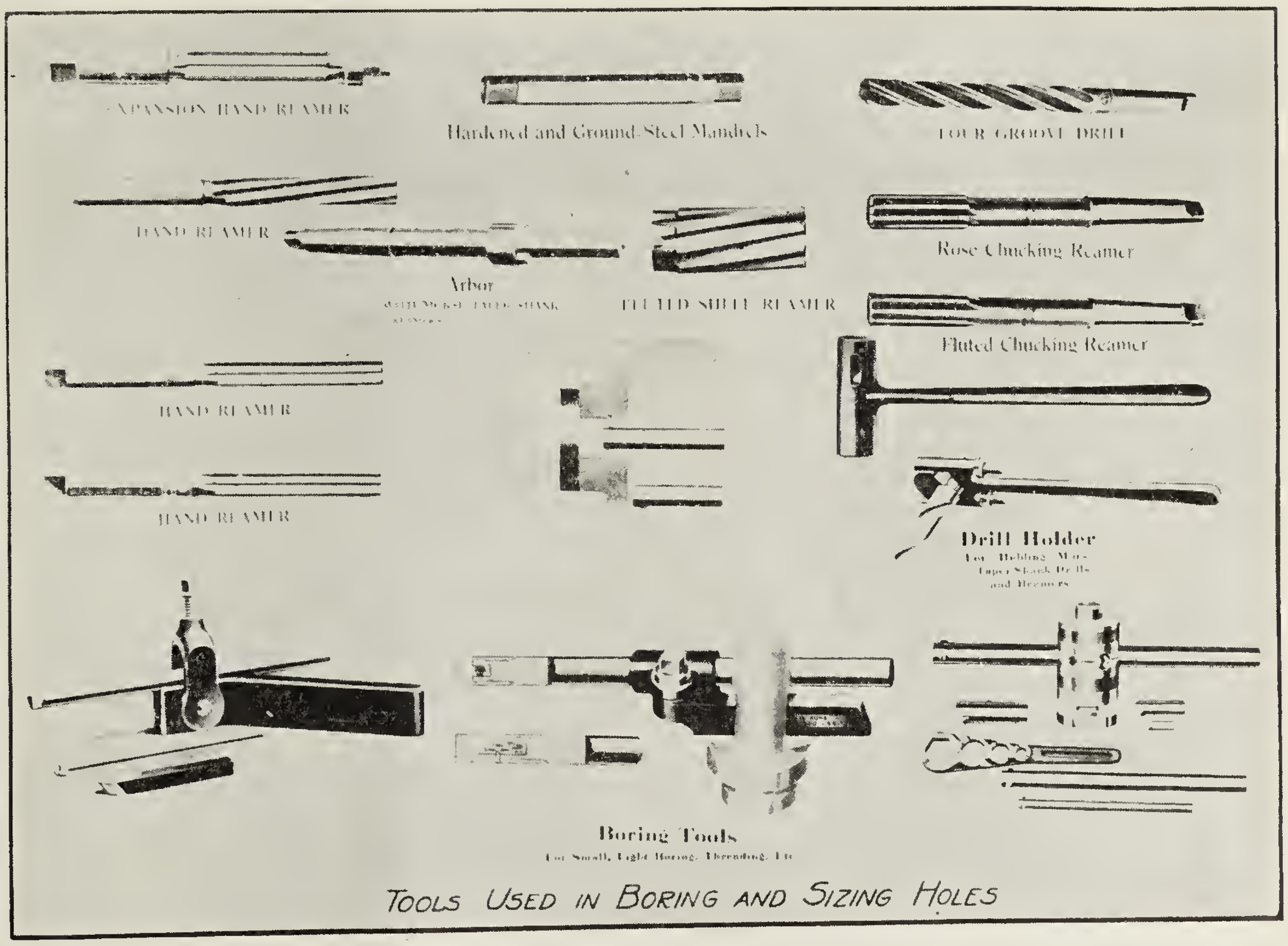


Plate II.

Setting Work in Chuck

When putting work in the chuck the jaws should be adjusted almost to the size of the piece to be held and approximately central with the chucking rings on the chuck and the jaws slightly tightened down on the work. Turn the lathe by hand to see if the job clears the ways and carriage. The power can now be turned on and the high spots located with a piece of chalk.

In Fig. 1 the operator is shown adjusting the jaws of the chuck in order to bring the work to the center. The two opposite jaws on this job are loosened a trifle and the jaw, on a line with the high spot as shown here, is tightened, thus pushing the job over to a more central position. This operation is continued until the job runs true. All the jaws are then tightened securely and the stock is ready to be machined.

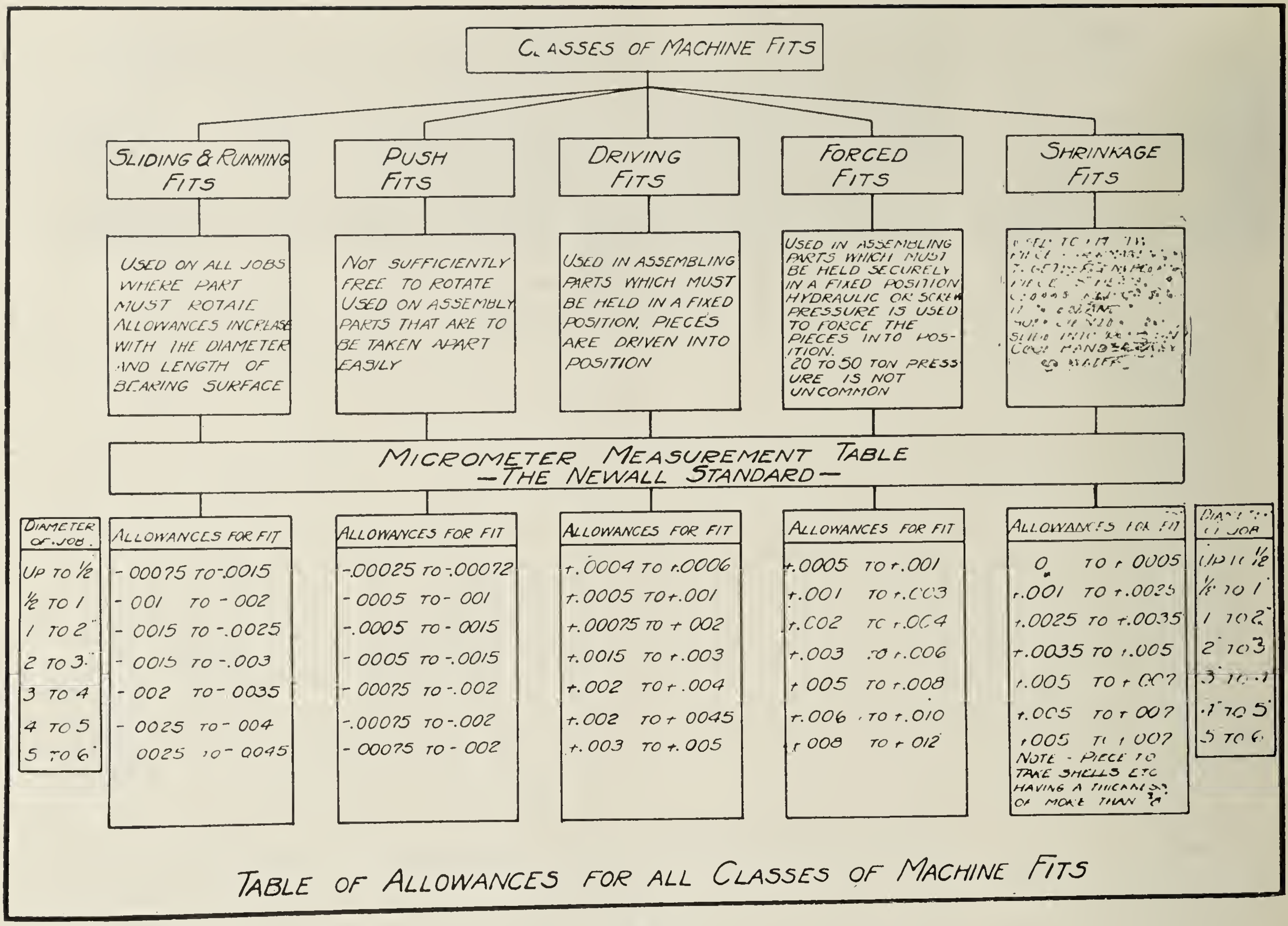
On some jobs it is necessary to place a shim under the chuck jaws so the work can be held securely. This is essential when chucking a casting with a tapered surface on which the chuck jaws grip. This condition is one reason why jobs when under a cut are jerked from the chuck. By using the shims to even up the contact surface of the chuck jaw the difficulty is eliminated.

Boring out a bushing for a pulley is one of the most common chuck jobs. The same practices used on this job are liberally adaptable to many other styles of lathe work. When sizing a cored hole the same practice is followed whether it is in machining a pulley bushing or a blank for a gear.

Necessary Tools

Every shop that intends to get the most service from the lathe installation should be equipped with such tools as are shown in Plate 2. Several types of reamers are shown and each is designed to take care of a particular type of work. Reamers are divided into two general classes: the hand and machine reamers which are made either solid or adjustable. The expansion or adjustable hand reamer as shown at the top of the illustration is one in which the cutting edges may be adjusted within certain limits. One of its great advantages is that it may be reground and again brought to exact size, which cannot be done with the solid reamer.

This reamer is also very useful when sizing holes to fit oversized wrist pins, and so forth. The spiral fluted hand reamer, shown just below the expansion reamer, will be found the best type of hand reamer for sizing holes in bronze of high-grade bearing metals. The most common



CLASSES OF MACHINE FITS

SLIDING & RUNNING FITS: USED ON ALL JOBS WHERE PART MUST ROTATE ALLOWANCES INCREASE WITH THE DIAMETER AND LENGTH OF BEARING SURFACE

PUSH FITS: NOT SUFFICIENTLY FREE TO ROTATE USED ON ASSEMBLY PARTS THAT ARE TO BE TAKEN APART EASILY

DRIVING FITS: USED IN ASSEMBLING PARTS WHICH MUST BE HELD IN A FIXED POSITION, PIECES ARE DRIVEN INTO POSITION

FORCED FITS: USED IN ASSEMBLING PARTS WHICH MUST BE HELD SECURELY IN A FIXED POSITION HYDRAULIC OR SCREW PRESSURE IS USED TO FORCE THE PIECES INTO POSITION. 20 TO 50 TON PRESSURE IS NOT UNCOMMON

SHRINKAGE FITS: [illegible]

MICROMETER MEASUREMENT TABLE
—THE NEWALL STANDARD—

DIAMETER OF JOB.	SLIDING & RUNNING FITS ALLOWANCES FOR FIT	PUSH FITS ALLOWANCES FOR FIT	DRIVING FITS ALLOWANCES FOR FIT	FORCED FITS ALLOWANCES FOR FIT	SHRINKAGE FITS ALLOWANCES FOR FIT	DIAMETER OF JOB
UP TO ½	- 00075 TO -.0015	-.00025 TO -.00072	+.0004 TO +.0006	+.0005 TO +.001	0 TO + 0005	UP TO ½
½ TO 1	- 001 TO - 002	- 0005 TO - 001	+.0005 TO +.001	+.001 TO +.003	+.001 TO +.0025	½ TO 1
1 TO 2"	- 0015 TO -.0025	-.0005 TO - 0015	+.00075 TO + 002	+.002 TO +.004	+.0025 TO +.0035	1 TO 2"
2 TO 3"	- 0015 TO -.003	- 0005 TO -.0015	+.0015 TO +.003	+.003 TO +.006	+.0035 TO +.005	2" TO 3
3 TO 4	- 002 TO -.0035	- 00075 TO -.002	+.002 TO +.004	+ 005 TO +.008	+.005 TO + 007	3 TO 4
4 TO 5	- 0025 TO - 004	-.00075 TO -.002	+.002 TO + 0045	+.006 TO +.010	+.005 TO + 007	4 TO 5"
5 TO 6"	0025 TO - 0045	- 00075 TO - 002	+.003 TO +.005	+ 008 TO + 012	+005 TO + 007	5 TO 6

NOTE - PIECE TO TAKE SHELLS ETC HAVING A THICKNESS OF MORE THAN ¾

TABLE OF ALLOWANCES FOR ALL CLASSES OF MACHINE FITS

Plate III.

of hand reamers is the straight fluted reamer. Two styles of these are shown. One is provided with a threaded end, the advantage of this being that it leads into the hole much better when a considerable amount of material is being removed.

Hand Reamers

These hand reamers are used on the bench in assembly and on the lathe. When using these reamers equalize the pull by using a double-ended wrench. Never use a monkey wrench. It distributes the strain unevenly and causes the reamer to cut an untrue hole. Machine reamers are shown to the right of Plate 2. The four-groove drill is used in cored holes. It does not size a hole accurately but is very effective in removing the excess stock before reaming with the hand reamer or the machine fluted chucking reamer. The rose chucking reamer is a machine reamer which cuts only on the end. It is not used on extremely accurate holes. It does not cut a particularly smooth hole but it brings the hole within a few thousandths of an inch of size to be finished with the hand reamer. The fluted shell reamer fits over an arbor; a number of these reamers of different sizes fit on one arbor, thereby considerably reducing the amount of steel used in each tool. This type of reamer is usually of the larger sizes. These machine reamers are held when used on the lathe with the drill holders as illustrated.

Boring Tools

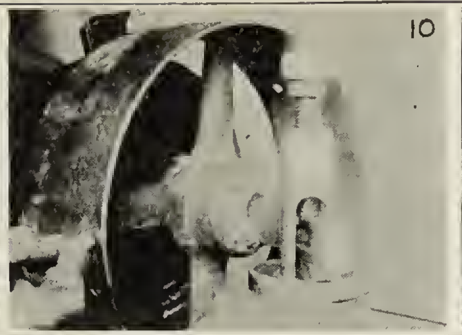
The boring tools as shown are for small, medium, and large jobs. One of the best boring tools for all general lathe work is shown at the left. The tool in the center is used on medium-sized jobs and the tool at the right is designed for heavy-duty boring. By using these types of boring tools it is unnecessary to have large amounts of high priced tool steel tied up in the solid forged boring tools.

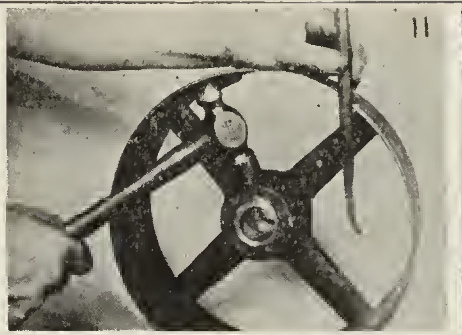
Boring bars are used as shown in Fig. 5; the operator is adjusting the tool to position. Have the boring bar as short as possible. A short bar prevents chattering which dulls the cutting edge of the tool. The tool cutting edge should be set a trifle below center. Adjust the speeds and feeds to about the same speeds used on external turning. In the job shown here the cored hole is bored to within 0.010 of an inch of size. The amount to be taken out with the reamer depends on the nature of the work; 0.002 to 0.005 is a fair amount but some lathe operators recommend 0.004 for a 3/16 inch reamer up to 0.013 of an inch for a three inch size.

Bringing Hole to Size

Our next operation is to bring the hole to size, which can be done by following the suggestion offered in Fig. 6, which shows the fluted chucking reamer held in the drill holder supported and fed by the dead center, reaming the hole to size. Notice in this view the tool-holder shank resting against the drill holder. This is an old shop kink but is not generally known. Many jobs are ruined by being jerked from the chuck when reaming. This is caused by the reamer leading or feeding into the hole too fast. To prevent this the reamer is held back against the dead center with the tool.

To machine the outside of a bushing the work is placed on a mandrel. Mandrels can and should be made in the shop. It is not practical for the small shop doing a variety of work to be entirely supplied with the manufactured mandrels. Their cost, however, is not prohibitive. Mandrels are tapered 0.001 of an inch to the inch. The large end of the mandrel should always carry the size. In Fig. 7 a bushing is shown supported between the centers of the lathe. Do not forget





that the angle of the rake is removed from the tool when turning brass.

Before turning the job down to size see that the lathe is cutting straight. It is best to make this check after the first cut. Caliper each end of the job and if tapered adjust the tailstock. Take another light cut over the bushing and test. If the job is still tapered reset the tailstock. This procedure is followed until the bushing calipers the same at both ends. The job is now ready to be turned down to size desired.

Bushings for pulleys are generally fitted to the pulley by a drive or force fit. It is necessary to know just how much larger the bushing should be turned than the bore in the pulley so it can be driven into place with enough pressure to hold securely.

Different Classes of Machine Fits

On repair jobs found in the brick and clay plant equipment it is found necessary to make several different types of machine fits. Just what allowances to make on these different jobs is somewhat of a problem. In machine assembly five different classes of machine fits will be found.

The sliding and running fit, as the name implies, is employed when parts must rotate. A push fit is not sufficiently free to rotate. The driving fit, forced fit and shrinkage fit are used in assembling parts which must be held in a fixed position. By referring to table of allowances for all classes of machine fits shown in Plate III, a more general idea can be obtained by the application of machine fits to machine assembly. Consult the table for allowances necessary when making any of the five classes of machine fits.

Enter Bushing into Oversize End of Bore

The bushing which is being turned in Fig. 7 is 2¾ inches in diameter. By referring to the micrometer measurement table under drive fits, we find an allowance of 0.0015 of an inch to 0.003 of an inch for this job. In fitting this bushing to the pulley it should be entered into the oversize end of the bore. Reamed holes in pulleys are almost always 0.0005 of an inch larger at the end from which the hole was reamed.

Fig. 8 shows how the bushing is driven in place. Support the hub of the pulley rigidly so there will be no danger of breaking the spokes, applying liberally in the hole a lubricant such as white lead and lard oil mixed to the consistency of paint. The bushing is then ready to be driven in place by using a maple block with square ends as a driving cushion. Oftentimes it is advisable to re-ream the bushing hole as the diameter is occasionally reduced after the bushing has been driven into the pulley. If the bushing is a trifle larger than necessary for the job it will tighten in the hole to such a degree that it cannot be driven in place. It may be possible to overcome this difficulty by forcing the bushing to place with a bolt. This is done by placing a bolt with a long thread thru the bushing and pulley, using washers at the ends. The nut is tightened up, causing the bushing to be forced in place. While the nut is being tightened repeated blows from the hammer on the side of the pulley hub will cause the bushing to release and submit to the pressure of the bolt.

Forcing on an Oversize Bushing

Another scheme that can be used as a last resort is to heat the hub with a blow torch, causing it to expand, which permits the bushing to enter the hole. In forcing an oversize bushing in place be very careful regarding the amount of pressure applied to the bushing because there is considerable danger of cracking the hub of the pulley.

Pulleys may also be bushed by following the suggestion offered in Fig. 9. Babbitt metal is poured into the pulley bore around a wooden pin which acts as a core. Before pouring the babbitt heat the hub a little so the metal will not "cold shut." On stopping off the bottom be sure that no leaks can occur when the metal is being poured. One of the best ways to stop off is by using paper backed up with putty or fire-clay silt. The correct pouring temperature for babbitt can be gaged by testing heated metal with a pine stick. This is done by placing the stick in the molten metal and when it chars the metal is of proper pouring temperature.

Truing up a Pulley

After the metal is cooled down and the core removed, the pulley is chucked in the lathe, as shown in Fig. 10. In truing up a pulley in the lathe considerable care must be exercised in getting the pulley concentrically located in the chuck. The procedure of chucking a pulley is the same as when chucking a bushing as previously described. A radial cut should be taken to remove the surplus babbitt on the face of the hub before boring and reaming the hole. It is always necessary to provide some means for anchoring the babbitt to the pulley. This can be done by drilling four small holes one-eighth inch deep in the periphery of the bore. These holes should be drilled on each end. On this job pictured here this was unnecessary, as will be seen in Fig. 11. An old keyway acts as the anchor for the babbitt. To get the best service from a loose pulley it is necessary to cut oil grooves. This can be done very easily by using the bent round-nose grooving chisel as shown in this illustration.

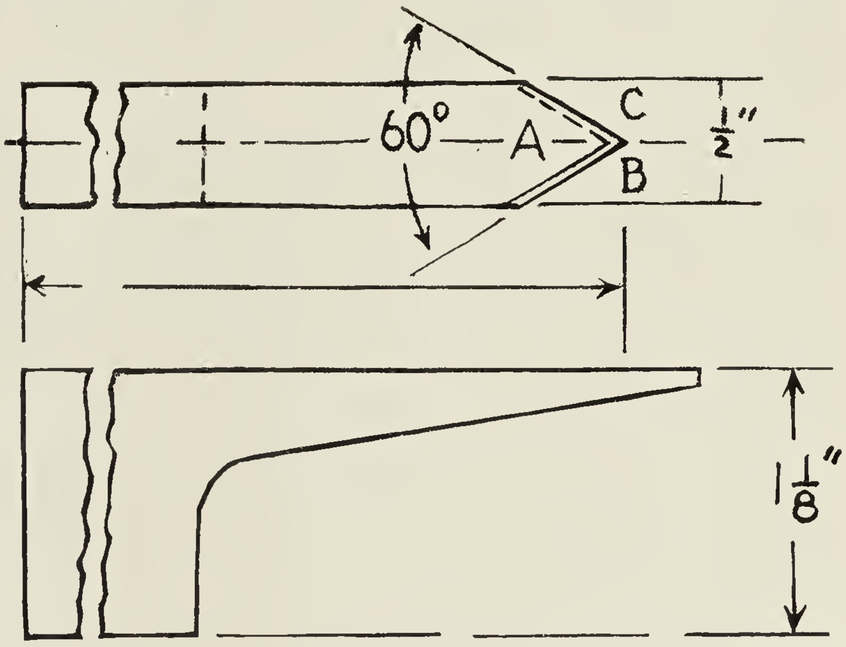
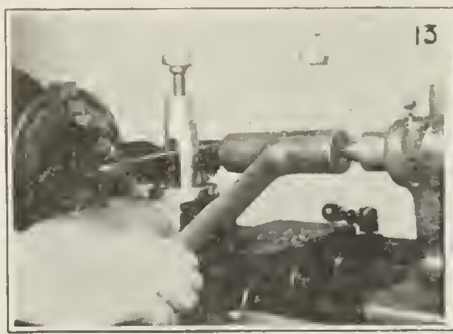


Plate IV.

Two Types of Jobs

Lathe boring work may be separated into two main classes, comprising all jobs common to everyday practice: the job that is cored or drilled out before it is chucked and the job that is chucked solid and must be drilled and then bored. One of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the handiest lathe tools, and one that is not generally known and used for this kind of job, is shown in use in Fig. 12. The job shown in this view is the first operation necessary to make a shaft collar. A shaft collar is made either from forgings or castings, bored and turned to fit the shaft, and retained in place with blind setscrews, or split or taper pins. A solid chuck of cast iron is chucked and the centering or spotting tool is used in locating the drilling center.

This tool as shown is held in the tool post. It is adjusted as near to the center of the job as possible by repeated trials. The tool is fed into the work by hand, a spot only sufficiently deep to locate the drilling positively is all that is needed. By following the detail sketch shown in Plate IV, this tool can be forged in the shop and ground to proper shape. It should be hardened and tempered to a straw color. With the center established the hole is drilled. Fig. 13. The hole should be about one-eighth of an inch smaller than the finished size of the bore as this will give enough metal for truing up any irregularities that may be developed when drilling.

Using Calipers

Inside calipers are used to size the diameter of a hole. The best method for setting the caliper is shown in Fig. 14. Inside calipers are made in both firm joint and spring caliper models. The spring caliper as shown is the most convenient to use. The end of the steel scale should be placed squarely against some flat surface as shown in this view. The finished end of the compound rest is used. One leg of the calipers is held securely against this same surface which aligns it with the end of the scale while the other leg is adjusted to the desired measurement.

Another method of setting the inside calipers is by transferring size from the outside caliper which has been previously set by calipering the job which is to enter the bore. Never caliper a hole when the job is revolving. To use inside calipers, hold the lower leg of the instrument on the bottom face of the bore and gage the size of bore with the top leg. Judging a fit allowance by the amount of side play the calipers have in a hole is a very common method of gaging oversize bores. As shown in Fig. 15, the operator is checking the diameter of the cut before permitting the tool to feed thru the hole. Many boring jobs are spoiled because the tool is set too deep.

Reaming Hole to Size

The next operation on this job is to ream the hole to size. Remember that chucking reamers are not made to ream more than 0.005 to 0.010 of an inch of metal. This reaming job shown in Fig. 16 is done in about the same manner as the reaming of a bushing, which has already been described. Reamers are very seldom lubricated. When reaming cast iron, however, some operators use a small quantity of machine oil with the idea that it causes the reamer to cut smoother.

Hand reaming in the lathe is not, as a general rule, thoroly understood. Many jobs done on the lathe require the hole to be reamed with hand reamer. Lock the lathe spindle, support the reamer with the tailstock center, and with a wrench turn the hand reamer into the hole. Never, under any circumstances, turn the reamer backward. If the hand reamer freezes in the hole and it is impossible to turn it remove the job from the chuck and drive the reamer from the hole with a brass or lead rod.

Trick for Reaming Oversize Hole

Occasionally it is necessary to ream a hole oversize a few thousandths of an inch. A makeshift way to get by, if an expanding reamer is not available, is to lay a strip of tin on one of the lands of the hand reamer. The reamer will then cut a trifle larger. As to the exact size the reamer will cut by following this practice, it is only possible to determine by trying the reamer in a trial hole.

After the hole has been reamed the casting is pressed into the mandrel and placed between the centers of the lathe, as shown in Fig. 17. When turning cast iron, do not forget to take a cut that is deep enough to get under the outer scale of the casting. Notice in the illustration the oil pin in the oil cup on the tailstock. When turning a job on a mandrel it is advisable to oil the dead center at intervals making sure that the center is not overheating. The edges of a shaft collar should be chamfered as there is considerable danger from these sharp edges when revolving at a high speed.

Set Screws Should Not Stick Out

This matter of safety is one which should receive attention in all repair work, even tho factory safety laws may not apply to brick and clay machinery. In this case it is important to avoid setscrews with projecting heads which might catch in the clothing of the machine operator. One of the best ways of avoiding this danger is to use headless safety setscrews which run flush with or below the surface of the collar and are turned by wrenches of hexagon steel which fit into sockets in the body of the screws. Another expedient sometimes suitable is to make the collar of sufficiently large

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diameter that the head of an ordinary setscrew may be put below the surface in a counter-bore, and turned with a socket wrench.

Chamfering

Chamfering is a very common and necessary operation on the lathe. It is done by following the suggestion offered in Fig. 18. A side tool is many times used on this type of job. Lines for drilling layouts can be made in the lathe at a considerable saving of time. Establishing the layout for the two blind setscrews used on this shaft collar is being done in Fig. 19. Many jobs of laying-out can be simplified by establishing a line on the job with a threading tool as done in this operation. When machining up a flange or a chuck collar, the layout for the holes can be done in this manner, guaranteeing a much more accurate job.

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GOOD PAVING BRICK PUBLICITY

One of the most effective ventures in the way of publicity for brick road construction has made its appearance under the direction of the Bureau of Public Roads. Lantern slides, showing the processes of brick manufacture, and various types of brick roads, have been prepared, along with a lecture that will make the pictures interesting as well as instructive to the auditors.

Thru the cooperation of the National Paving Brick Manufacturers' Association the series will be available to all brick manufacturers and territorial associations identified with the national association, who are interested in promoting the thought of brick pavements in city and country. The lecture has been so designed as to appeal to the layman as well as the engineer or production expert. Thru these channels, clubs, trade bodies and other organizations interested in public work may have use of the slides and the lecture.

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AN ALL-CLAY PRODUCTS HOME

Brick and Clay Record is indebted to the Los Angeles (Cal.) Pressed Brick Co. for the interesting pictures here shown. They show an exterior and interior view of a residence owned and designed by Col. Charles H. Paine, United States Army, retired, who was at one time instructor of architecture at West Point. Col. Paine was an architect of recognized ability and his work in teaching it made him familiar with all the possibilities of building materials. It is interesting, therefore, to see that such a man would choose for his home a structure built almost entirely of clay products, as an economical, practical and beautiful building material.

The exterior walls and the interior partitions are of smooth face, Heath tile laid up in a struck joint of cream mortar. In the interior the plate rail, mantel and recess nooks, together with louvers, arches, benches, and so forth, are also built of Heath tile. The floors thruout the house are 6 x 6 inch Murray tile. The roof is built of small Spanish roofing tile.

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N. P. B. M. A. PLANS "DIFFERENT" MEETING

Preliminary plans for the annual convention of the National Paving Brick Manufacturers' Association are under way. The convention will be held at Hotel Sinton, Cincinnati, Ohio, January 22 and 23. Association executives at association headquarters in Cleveland have gone a step farther this year in added service to members, and will arrange hotel accommodations for those desiring them.

With a view toward making all meetings interesting, as well as instructive, the sessions will be divided into groups with special features to be discussed by these groups. These will be for owners and executives, for salesmen and territorial field men, and for the plant superintendents. In this way it is believed that topics of particular concern to certain groups may be taken up by such groups, who need not be engrossed in other topics of no particular interest to them. In consequence a special urge is being made upon the executives to have all their salesmen and mechanical experts attend the convention.

The owners and executives group will be under the leadership of Eben Rodgers, Alton (Ill.) Brick Co. Roy W. Wallace, Metropolitan Paving Brick Co., Bessemer, Pa., will lead the plants group, and C. W. Denniston, vice-president, the American Clay & Cement Co., Rochester, N. Y., will direct the sales group.

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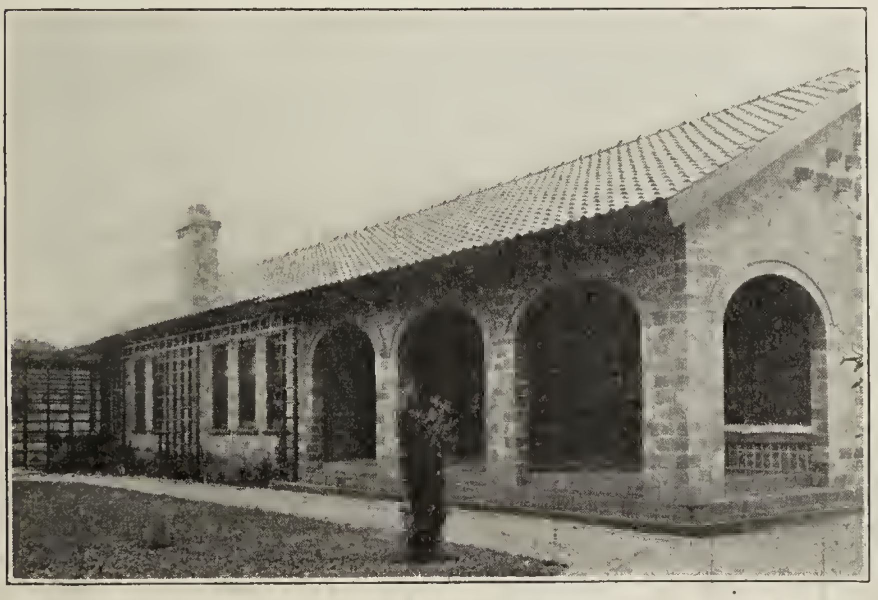
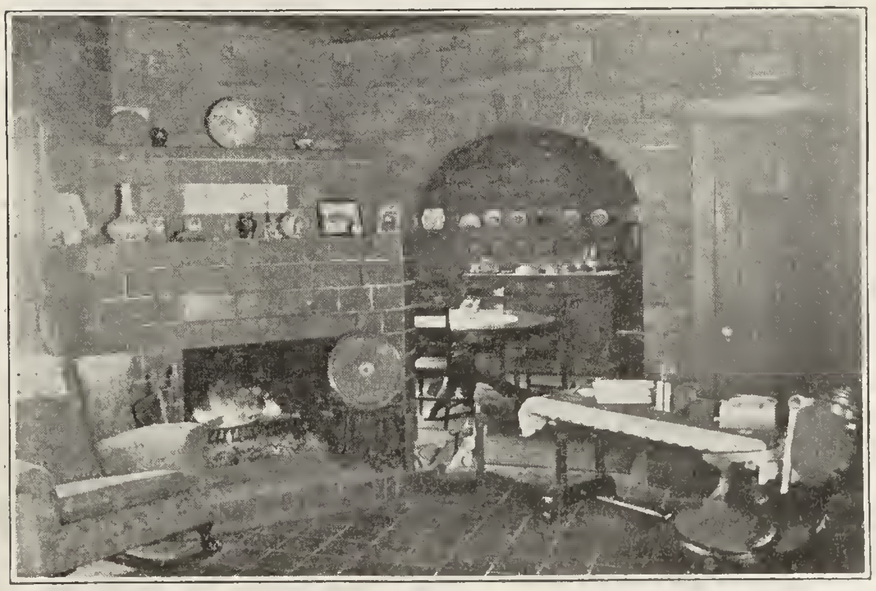
NORTHWEST ASS'N TO MEET JANUARY 12

The Pacific Northwest Clay Workers' Association will hold its winter meeting on Saturday, January 12, 1924. The meeting will take place in the Ceramic Engineering Department of the University of Washington. There will be sessions in the morning and the afternoon, followed by a dinner at 6 p. m. In the evening there will be movies shown for the entertainment of the delegates. A most interesting program has been prepared, including discussions on the following: Wood firing, coal firing, oil firing, use of waste heat, automatic stokers, railroad tunnel kilns, and continuous economizer kilns.

A good attendance is expected in view of the excellent program scheduled. One manufacturer has decided to shut down his entire plant for the entire day so that everyone in his organization might attend this meeting.



Exterior of an All-Clay Products Home Built by Col. Charles H. Paine, of the U. S. Army



The Interior Walls and Floors Are All of Ceramic Products, Giving an Unusual Appearance

FINE CERAMIC MANUFACTURE

A Department Devoted to Practical Problems in the Manufacture of Higher Grade Ceramic Products Such as Whiteware, Including Electrical Porcelain, Floor and Wall Tile, Sanitary Ware, etc., as Well as Stoneware, Terra Cotta, Special Refractories and Other Articles Where High Grade Clays Are Employed in Their Fabrication.

1923 GROWTH IN POTTERY INDUSTRY

DURING THE LAST YEAR 42 glost and bisque kilns have been added to the production of generalware in the United States, while six double decorating kilns have been built by three different concerns.

The addition of kilns is the greatest known in any single year of the industry in the United States, according to reports presented at the annual meeting of the United States Potters' Association by Joseph Mayer, of the Mayer China Co., Beaver Falls, Pa.

The Homer Laughlin China Co., of Newell, W. Va., and the W. S. George Pottery Co., of East Palestine, Ohio, have made the largest extensions, the former now completing a tunnel kiln plant—the first to be erected in the Upper Ohio Valley territory, and the George interests completing a nine kiln shop.

Albright Builds Four Kilns

Four kilns are under construction by the Albright China Co., of Carrollton, Ohio, and other additions have been made to the plant of this company to take care of this increased production. The addition will give this concern a capacity production of 14 kilns.

At the plant of the East Boston (Mass.) Co., one generalware kiln has been placed in operation, an addition erected to the kiln shed and a new office building erected.

One pair of decorating kilns and a new bisque kiln compose the additions to the plant of the Cannonsburg (Pa.) Pottery Co. This company has also erected an addition to its warehouse.

Crooksville China Expands

Over 5,000 additional feet of floor space has been added at the plant of the Crooksville (Ohio) China Co., which is now being occupied for office space and for the decorating department. This improvement gives the firm a greater producing capacity in its decorating department.

The Crown Potteries Co., at Evansville, Ind., has increased its production of generalware, by the erection of an additional glost kiln.

The bisque kiln shed has been enlarged at the plant of the French China Co., at Sebring, Ohio, and other extensions include the erection of one bisque and two glost kilns. This addition will give the French plant a capacity of 16 kilns.

After increasing the capacity of its decorating department, the Atlas China Co., of Niles, Ohio, has placed in operation an additional glost and bisque kiln.

George Builds Glost Kiln

At the No. 3 plant of the W. S. George Pottery Co., Kittanning, Pa., an additional glost kiln has been erected during the last few months, and new buildings built for the warehouse and decorating departments.

This same firm is completing its nine kiln plant at East Palestine, Ohio, and it is believed the shop will be ready for production perhaps during January or February next year.

With the additional kiln at Kittanning and nine more at East Palestine, the George company will during 1924 have the production of 43 kilns—the largest production of any single individual in the generalware industry, and second to the Homer Laughlin China Co.

Big Improvements to Limoges

It is believed that before the year ends, the improvement program at the plant of the Limoges China Co., Sebring, Ohio, will have been finished. An addition of 87 by 83 feet has been added to the clay shop of this plant, and to the decorating department, an addition measuring 63 by 156 feet is nearing completion. To the glost ware room, an addition 27 by 72 has been provided, and in addition, a new office building 28 by 63 feet will soon be ready for occupancy.

At the Chester, W. Va., plant of the Edwin M. Knowles China Co., one pair of decorating kilns has been added to its capacity.

The Maddock Pottery Co., of Trenton, N. J., has added four decorating kilns during the last year.

Onondaga Pottery Enlarges Plant

An addition measuring 100 by 35 feet has been added to the decorating department of the Mercer Pottery Co., at Trenton.

Because of the increased demand for its line of hotel china, the Onondaga Pottery Co., of Syracuse, N. Y., has another addition to its Court street plant nearing completion, which includes four kilns, together with the necessary buildings, and covering about 100,000 square feet of space. The power plant of this shop has also been enlarged during the last few months.

A three-story addition has been completed at the plant of the Pope-Gosser China Co., at Coshocton, Ohio, during the last few months, providing about 12,000 feet of additional floor space, of which 4,200 square feet is being devoted to the decorating department.

New Packing Department for Salem China

The new packing department at the plant of the Salem (Ohio) China Co., has been completed, also their new office section. By these changes additional space has been provided for the decorating department, and also to the warehouse space.

The Southern Potteries Co., at Erwin, Tenn., has completed the building of an additional glost and bisque kiln, giving the firm the production of four bisque and five glost kilns. These improvements were decided upon after the company was placed under the active management of Charles W. Foreman, formerly located at Minerva, Ohio.

At the plant of the Sebring (Ohio) Pottery Co., 7,500 additional square feet has been added to the decorating department.

A new office building, an additional bisque kiln and the enlargement of their decorating department includes the improvements made at the plant of the E. H. Sebring China Co., at Sebring, Ohio.

Shenango Adding Seven Kilns

Seven additional kilns are being built at the plant of the Shenango Pottery Co., New Castle, Pa., which will provide the firm with ten bisque and nine glost kilns, also one sagger kiln. Other improvements now under construction include a new office building, warehouse, packing department, cooper shop, sliphouse, clay shop, lining shop, dipping shop, glaze room, and a dining room for both men and women. This extension program is expected to be completed about February 1924.

The Sterling China Co., of Wellsville, Ohio, has erected an additional glost kiln; a warehouse 40 by 40; a new sagger shop and clay room, also an addition to the clay shop.

At the plant of the Thompson Pottery Co., East Liverpool, Ohio, this firm has constructed a new sagger department with a tunnel dryer, also a new office building and sample room, during the last year.

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IMPORTS AND DOMESTIC CHINA PRODUCTION

Including imports of white granite, semi-porcelain, "C. C." ware and chinaware, valued during the fiscal year of 1922 at $11,889,964, and the domestic production for the same term by the members of the United States Potters' Association, which has been valued at $36,433,959, the combined valuation of imports and domestic production is officially placed at $48,323,923, by the Statistics Committee of the United States Potters' Association, of which Joseph Mayer, of the Mayer China Co., Beaver Falls, Pa., is chairman. This information was made known at the annual meeting of the association.

The decline in the value of the domestic production for the fiscal year of 1922 over that of 1920, which was $49,663,973, or $13,230,014 more than in 1922 is claimed due to the abnormal market prevailing in 1920, whereas in 1922 there was an unsteadiness in business, coupled with a strike in the generalware industry of considerable duration.

Total importation of earthenware, stone and chinaware for the United States fiscal year is 10.68 per cent. more than 1922 and 1.07 per cent. more than 1921. In 1921 the value of the imports of these lines has been placed at $13,020,937 and for 1922 at $11,889,964, while for the fiscal term in 1922 the valuation is given as $13,160,662.

Strange as it may appear, the imports from Japan have declined considerably since 1921, when the record shows the total valuation of the imports from that country to have been $2,585,632, and in 1922 the value is placed at $1,585,461. For the fiscal term in 1923 the value of ceramic imports from Japan is placed at $2,180,386.

From all countries, the report discloses that the valuation of imports has declined, but when the combined value of imports and domestic production is taken into consideration, there has been an increased distribution of ceramic products thruout the United States.

The per capita consumption of these products, therefore, is very small, or less than 50 cents per capita, based on a population of 110,000,000.

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MADDOCK SUBSIDIARIES SOLD

The Thos. Maddock Sons Pottery Co., of Trenton, N. J., which for many years has held controlling interest in the Trenton China Co., and the Lamberton China Co., both of Trenton, has disposed of its interest in these companies to a combination of Trenton manufacturers. The reported purchase price of more than $700,000 was paid by a newly-formed company, which includes among its stockholders Charles A. May, long connected with the Maddock pottery interests, John R. Scammell, Scott Scammell, Charles H. Scammell and Frank G. Scammell, all of Trenton.

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SELLS INTEREST IN POTTERY

Recently announcement was made that the interest of M. E. Griffin, part owner of the R. and G. Pottery of Pittsburgh, Pa., has been purchased by H. E. Kettering and Ellis Lyon.

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NEW POTTERY ALMOST COMPLETED

The new seven kiln plant of the W. S. George Pottery Co., at East Palestine, Ohio, may be placed in operation early in the new year. A considerable portion of the plant is now under roof, and soon machinery will be installed. This company also operates a plant at Kittanning, Pa., and also one at Cannonsburg, Pa., and two at East Palestine.

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DEATH TAKES W. E. SHARPS

Nervous trouble proved fatal to William Sharps, president of the American Ball Clay Co., Philadelphia, Pa., on November 20, 1923. Mr. Sharps had been suffering from a nervous attack for some time. At the time of his demise he was active in business and civic circles.

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ARRANGES POTTERY EXHIBIT

A pottery exhibit was recently arranged by J. W. Pinson of the Athens Pottery Co., Ft. Worth, Tex., for the annual convention of the Texas Federation of Women's Clubs in Wichita Falls. Mr. Pinson personally supervised the display of this exhibit which was used to illustrate the talk "The Romance of Pottery," which was made by Mrs. Guy E. Browne of Houston, on the Fine Arts program.

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RUMORS SAY NEW POTTERY IN CHILLICOTHE

Another pottery is planning to locate in the East End, Chillicothe, Ohio, according to a persistent rumor which has been afloat in that territory of late. Little information is available but it is thought that the new company contemplates the manufacture of dinnerware.

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FORM NEW PORCELAIN COMPANY

Incorporation of the Summitt Porcelain Co., Inc., 90 Broad Street, Newark, N. J., has been announced. The company was formed with a capital stock of $250,000.

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STORAGE FACTORY DESTROYED

A large storage factory, filled with baled hay was razed and the contents burned when fire gutted that portion of the East Liverpool, Ohio, pottery plant of the C. C. Thompson Pottery Co. A small building in which clay was stored also was damaged. Dale Thompson, manager of the concern, said the loss will total $5,000. Plans are under way to rebuild the factory addition, which will be of greater capacity than the one razed.

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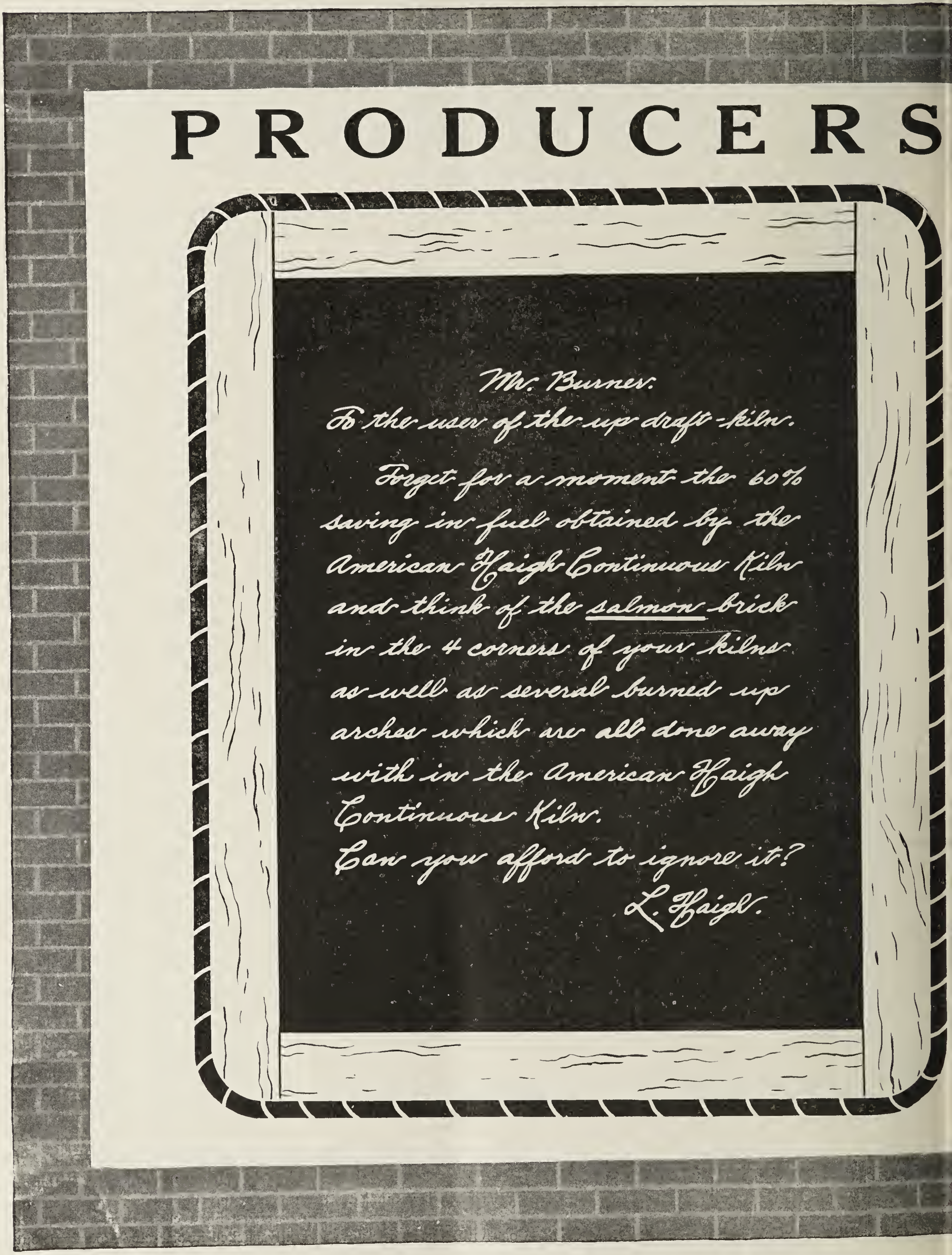
POTTERY PACKING CHANGED

The electrical porcelain plant of the Cook Pottery Co., Trenton, N. J., has completely done away with shipping its small insulators in sawdust-filled containers. The porcelain parts are now carefully packed in ordinary boxes without the unsightly sawdust, and by proper packing the breakage has been reduced to very slight proportions.



PRODUCERS

Mr. Burner:
To the user of the up draft-kiln.

Forget for a moment the 60% saving in fuel obtained by the American Haigh Continuous Kiln and think of the salmon brick in the 4 corners of your kilns as well as several burned up arches which are all done away with in the American Haigh Continuous Kiln.

Can you afford to ignore it?

L. Haigh.

ND SAVERS

UILT RIGHT
RUN RIGHT

50,000 Bricks Daily from this Kiln with less than 1% Salmon

In the plant of the Lehigh Brick Works, Allentown, Pa., they are burning with less than One Per Cent of Salmon brick. The accompanying picture shows the Lehigh Haigh Kiln.

e Our Catalog in
e Clay Products
Cyclopedia

The HADFIELD-PENFIELD STEEL CO., Bucyrus, Ohio

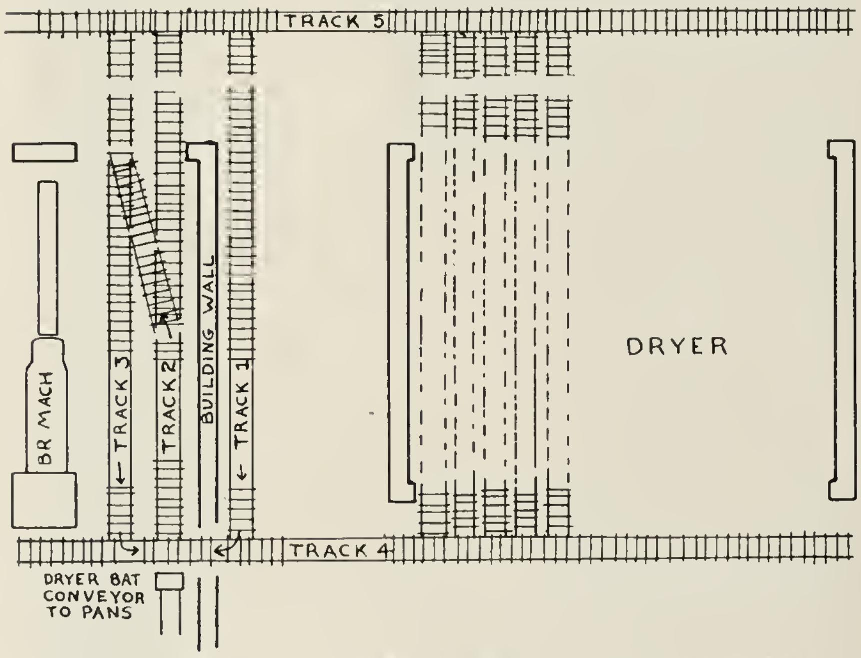
Management and Superintendence

NEW TRACK AND DRYER ARRANGEMENT

In designing the plant of W. H. Hill at East St. Louis, Ill., Marion Blair, superintendent, incorporated some original ideas which have worked out very satisfactorily. This article describes a novel method of handling dryer cars which carry dryer breakage.

Three Tracks Are Used to Handle Empty Dryer Cars and Cars Carrying Dryer Bats.

As the photograph and drawing show, there are three sets of tracks parallel to each other and also to the brick machine. The two tracks nearest the brick machine are connected with a switch. The drawing shows the layout of the tracks, dryer and brick machine. A rather unusual feature is that the cars being hacked with green brick move in the direction opposite to that in which the brick machine operates.



Dryer and Track Layout. Note Position of Dryer with Regard to Brick Machine.

Empty cars are sent to the hackers direct from track 5 over track 3. Cars containing damaged ware, however, are sent back along track 1 which runs along the outside of the building. Arriving at the track leading into the dryer the car is run onto a transfer car and pushed a few feet to a belt which takes care of the damaged ware. The empty car is then sent down track No. 2 to the switching place and switched over onto track No. 3. There it takes its place in the line of cars waiting to be loaded with green ware by the hackers. The ware is carried to the dryer over track No. 4.

HANDLING CLAY CHEAPLY

This photograph shows the beginning of an interesting equipment installation at the plant of W. H. Hill & Co. at East St. Louis, Ill. This is a new plant equipped with the Minter system of drying and burning. It was designed by Marion Blair, superintendent, who was formerly superintendent for W. H. Hill at the Murphysboro (Ill.) Paving Brick Co. To come back to the story of the photograph here shown. It shows clay being dumped from a hopper bottom dump car thru an opening in the track. This opening leads directly to a plate clay feeder located under the track. The feeder carries the clay into a dry pan.

Clay Is Dumped onto a Plate Feeder Under Tracks Shown and Is Fed into Dry Pan.

The arrangement is exceedingly simple and remarkably efficient and brings the cost of handling the raw material down very low. The railroad track shown in the photograph is just a few feet from the main building of the plant.

Clay is shipped to the plant at East St. Louis from a deposit about five miles distant. The company owns a number of railroad cars of the hopper bottom dump type and therefore, need not worry about demurrage charges when the cars cannot be unloaded at once.

The feeding arrangement requires but one man to tend the clay car and another to take care of the dry pan and feeder. This latter man is also available for other duties.

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HALE GETS REFUND ON MINERAL RIGHTS TAX

That the Indiana state board of tax commissioners is holding the opinion that allowance of claims for tax refunders on account of transfer of mineral rights is unjust, was disclosed by County Attorney Robert H. Catlin, Terre Haute, Ind., after Judge John E. Cox of the Superior court had ordered 11 such claims against the board of county commisioners docketed under separate numbers. The claims previously had been included in the claim of Frank R. Hale against the commissioners for tax refunder because of the transfer of mineral rights belonging to him to the Vigo American Clay Co. Judge Cox, October 23, allowed Hale's claim of $304.07 for county taxes collected and $33.81 for state taxes. The county commissioners appealed the case to the State Appellate court and it was said by Catlin that the 11 other similar claims also will be appealed should the claimants obtain judgments.

The Letter Box

A Place Wherein Letters That Have General Interest Are Published and Commented Upon

APPEAL OF CLAY TOO STRONG FOR HIM

Once a clayworker, always a clayworker, at least so it would seem after one reads the letter which Wm. A. Butler of San Francisco has sent to Brick and Clay Record. Mr. Butler has wandered around a considerable part of this world of ours and has apparently found no business quite so engaging as the manufacture of clay products. Here is his letter:

Gentlemen:

Please enter my subscription to Brick and Clay Record. I have been in the building business for the last ten years, but was formerly identified with the brick and clay business. There is such a fascination about it that I am drawn back to it like steel to a magnet, or, as one might say, after having been tossed about in a sea of reinforced concrete, I have drifted into a current that is slowly bringing me back to brick and terra firma.

While engaged in the building business in Honolulu about three years ago, I called the natives' attention to the brickmaking possibilities there. I told them about the different materials that would make common brick and pointed out to them the fact that there was more than one well defined deposit of kaolin on the Island of Oahu—the island containing Honolulu—and quoted as authority for the statement a professor of the American Geological Society.

The mild, beautiful, delightful Paradise of the Pacific gets on one's nerves, so after a while, still unsatisfied with not having started a real clay plant in Honolulu, I left for the good U. S. A. by way of Canada, Tia Juana and San Diego, finally landing at the good old town of San Francisco.

Very truly yours,
Wm. A. Butler.

Questions and Answers

Best Authorities in Every Clay Working Branch Are Called Into Consultation—Their Advice Is Free to You, Thru These Columns

Address all communications intended for this department to "Editor Questions and Answers, care of Brick and Clay Record," Chicago

HOW ARE ROUGH TEXTURES MADE?

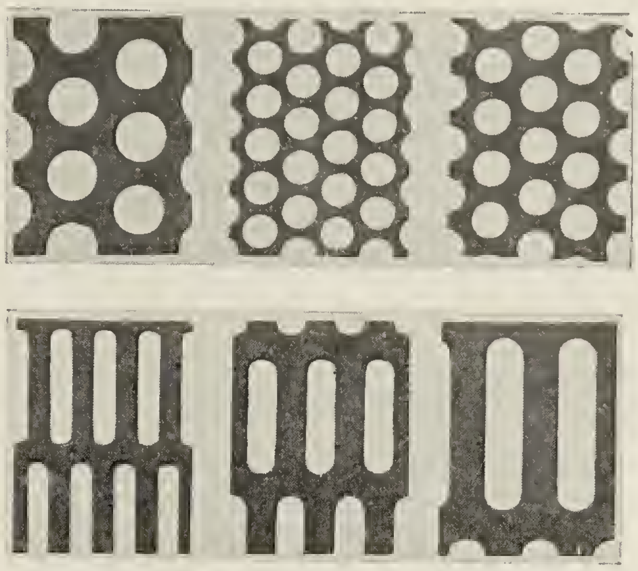
1,082. *California—We would like to manufacture a stiff-mud, wire cut, scratched surface face brick, similar in texture to the rug face brick made in the East, and would like to know whether these designs or textures are patented to safeguard against our infringing on any patents that might be in existence. We would use a device similar to a small rake, held in contact with the surface of our clay bar as it leaves the die, after which we would press the surface down by the use of felt covered pads or rollers.*

We would like to know whether there are patents covering such processes and designs as would be thus secured.

Most of the rough texture brick scratching processes, such as are used in the East, are not patented. We are of the opinion that you can use a device similar to what you describe in your first paragraph, that is, a rake held in contact with the surface of your clay bar as it leaves the die, to scratch the surface of your clay.

On pages 834 and 835 of the May 17, 1921 issue of Brick and Clay Record, there is an article describing how rough

Perforated Steel Screens



For Screening Clay, Shale, Sand, Gravel, Stone and Cement

All sizes and shapes of holes in metal of proper thicknesses to give the best screening results.

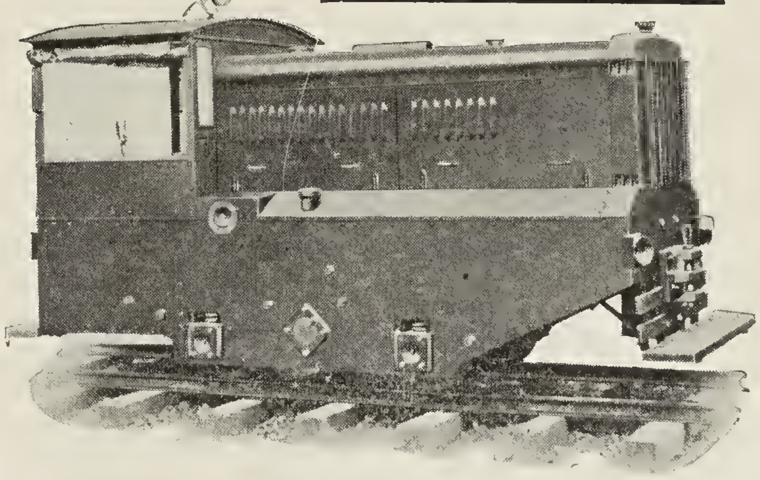
Sheets furnished flat or rolled to shape for revolving screens.

THE HARRINGTON & KING PERFORATING CO.

5639 Filmore St., Chicago, Ill.

NEW YORK OFFICE: 114 Liberty St.

MODEL "F" 6 TON



The Proof of Durability Lies in Service

The service which users get from the MINSTER Locomotive bears out our contention of "Longest Life, Uninterrupted Service."

Made in 2 to 8 ton capacities.

Write for catalog.

The Industrial Equipment Company

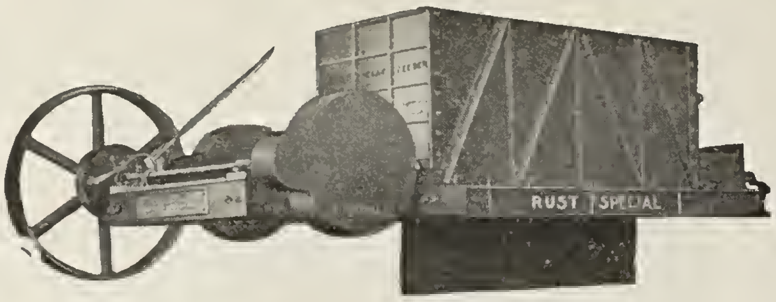
510-512 Ohio St. MINSTER, OHIO

Eastern and Export Department:

The Herbert Crapster Co., Inc., 1 Madison Ave., New York City

MINSTER

INDUSTRIAL LOCOMOTIVES



Improve Your Mix
with the
MARION
"RUST SPECIAL"
Feeder and Mixer

Remove the uncertainty in your mixing operation; issue a steady feed into the crusher by installing a Rust Feeder.

Send for catalog describing Rust Feeder and full line of Marion clay plant equipment.

Marion Machine Foundry & Supply Co.
P. O. Box 395
MARION, INDIANA

"We Are Very Well Pleased With the
BAY CITY EXCAVATOR"

Says The Mohawk Brick Company, Mechanicsville, N. Y. "It is inexpensive to operate, doing all the work which we want it to do, and we realize that if this machine had not been installed this spring, we would have had considerable difficulty in digging our clay, owing to the present labor conditions.

"We recommend the machine very highly."

Investigate the time and labor saved. Full details on request.

THE BAY CITY DREDGE WORKS
BAY CITY, MICHIGAN
Eastern Office: 302 Broadway, New York City

texture brick are made by two processes. They are illustrated also. Unfortunately we do not have any more copies of this issue on hand but perhaps you have this issue in your files.

* * *

RIGHT TEMPERATURE FOR SALT GLAZING

1,081. *Alberta—Is it true that salt used in glazing sewer pipe kilns loses its effect when subjected to a heat equal to Cone 9? We have been told so by a ceramic engineer, but we do not find this so in actual practice.*

Most sewer pipe kilns are salt glazed at temperatures below Cone 9. Cones 5 to 7 are the most common temperatures for salt glazing. However if you do not find that salt glazing does not lose its effect at Cone 9 on your plant, this should answer your question.

The ceramic engineer who told you that salt lost its effect above Cone 9, probably meant that the ware did not take on the glaze. This may be true in some instances, and then again it may not hold true in others. The clays vary so greatly that one cannot make any general statement.

If, however, you are obtaining a good salt glaze at Cone 9, this glaze should be more permanent and better in many respects than a glaze at a lower temperature.

* * *

HOW MANY TONS IN ACRE OF CLAY

1,083. *New York—Will you please send me data in regard to how many cubic yards and also tons of clay there are in one acre of clay one foot deep?*

I have seen this data in some publication, which I believe was Brick and Clay Record, but at this time I am unable to locate same.

We have not published in Brick and Clay Record recently any information along the lines that you request. However, on consulting Kent we find information that will probably give you the figures you want. According to Kent there are 43,506 square feet in an acre. The weight of clay per cubic foot is 120 to 150 pounds, varying according to the nature of the material. These figures will enable you to calculate the number of tons of clay per foot acre. According to the above mentioned figures there are 613 1/3 cubic yards in an acre of clay one foot deep.

* * *

ASKS TWO INTERESTING QUESTIONS

1,084. *Ohio—We have two questions that we would like to have your engineers answer.*

How much water does it take to make 1,000 *common brick, if the ground clay is thoroly dry?*

How large a reciprocating pump will it take to supply three streams of water with a one-half inch nozzle outlet at a pressure of 60 *pounds if the pump is located* 1,000 *feet away and pumps thru a two inch pipe?*

There is no direct answer possible to your question of "How much water it takes to make 1,000 brick if the ground clay is thoroly dry." Clays vary a great deal with regard to the amount of water required to produce the proper consistency for molding. We assume that you are making your brick by the stiff mud plastic process. In this event it requires from 16 to 25 per cent. of water by weight to bring the clay to the proper consistency.

With regard to your other question, we have received some interesting and valuable information from manufacturers of pumps, which is published here.

W. M. White, manager and chief engineer of the hydraulic department of Allis-Chalmers Manufacturing Co., offers the following helpful information:

"Three one-half inch nozzles with 60 pounds pressure at each nozzle will discharge about 170 gallons per minute. The friction loss of this quantity of water thru 1,000 feet of two inch

"Sturtevant Drying Systems
Are Economical, Efficient, and Sure"

Waste heat from kilns, utilized with Sturtevant Dryers, reduce drying costs to almost nothing.

Kilns are cooled more rapidly by this method, making them available for use two or three days sooner.

Production has been increased in many plants. Room for greater efficiency may be found in yours.

May we assist you?

B. F. Sturtevant Company
HYDE PARK BOSTON, MASS.

913

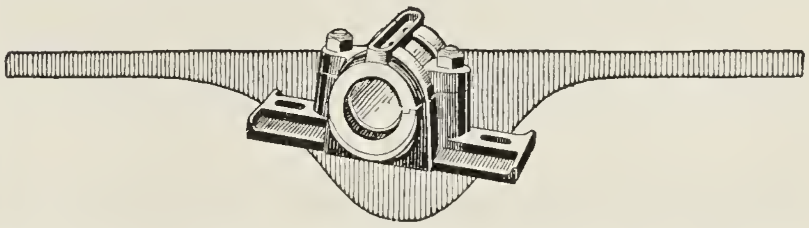
GEARS

SMOOTH running; correct in design, accurate and true to pitch, Caldwell gears are bound to please you. We make all types—machine-molded, cut tooth, mortise gears, worm gears, etc. Caldwell Promptness is Traditional. It is at your service. Our stocks assure prompt shipment.

Let us figure with you next time you are in the market.

H. W. CALDWELL & SON CO. LINK-BELT COMPANY, OWNER
Dallas, Texas, 709 Main Street—Chicago, 17th Street and Western Ave.
New York, Woolworth Bldg.

CALDWELL



Announcement

The American Dressler Tunnel Kilns, Inc., will have a message for the clay products industry in the near future which will be of considerable interest.

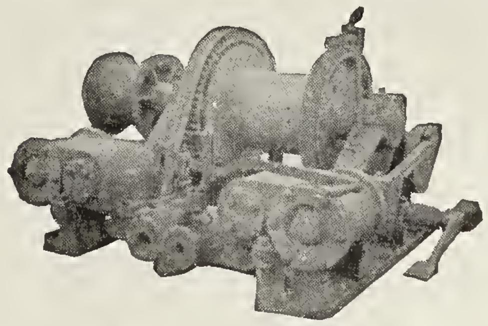
The message will appear in this paper at the earliest possible moment. In the meantime we are, as usual, ready to serve you.

American Dressler Tunnel Kilns, Inc.
1740 East 12th St. CLEVELAND

FOR SALE

BARGAIN

Emerson, Bratingham Hoists
UNUSED
DOUBLE CYLINDER, SINGLE DRUM, IN FIRST CONDITION
$125.00 Each F. O. B. Chicago



Capacity 10,000 Pounds
IMMEDIATE SHIPMENT
Detailed Specifications Furnished on Application
"QUANTITY IS LIMITED"

Hyman-Michaels Co.
531 Peoples Gas Building Chicago, Ill.

We are headquarters for first class relaying steel rails and angle bars

A 20% DIVIDEND

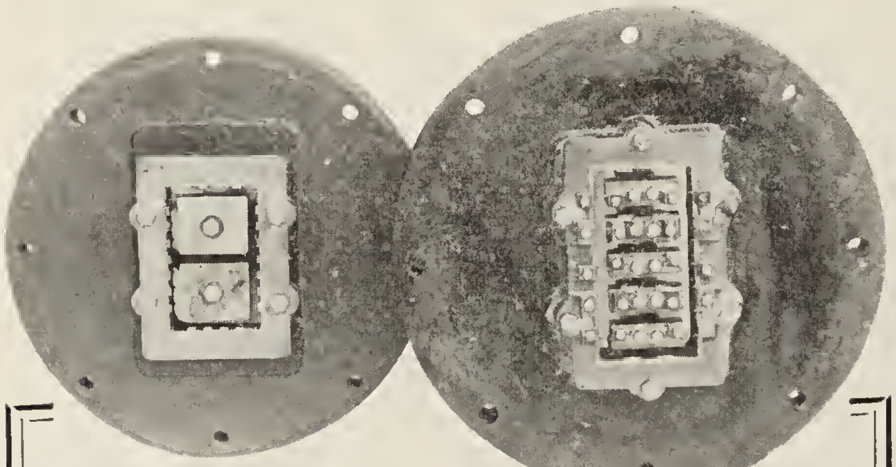
THIS is the proportion of the premium which we return upon our Fire Insurance policies. What return do you expect from your present policies at expiration?

The Mill Owners Mutual Fire Insurance Company is nearly 50 years old —has never passed an annual dividend, and has created a surplus and reserve fund of nearly $1,500,000 for the Protection of Policyholders.

This Department is devoted solely to the Insurance interests of Clay Products Manufacturers.

For particulars address

CLAY PRODUCTS MANUFACTURERS DEPT.
SQUIRE COMPANY, Inc., Manager
81 John Street, New York



We Can Furnish It

No matter if it is a die of ordinary construction or of intricate design or construction, we can furnish you the best.

We do not build a universal die of one construction to meet all machines and material but build them to meet YOUR individual requirements.

We use the best of materials in the construction of our dies.

All parts are interchangeable to replace worn parts.

When you want dies of sterling quality—dies scientifically built—then equip with the Lincoln dies.

The Lincoln Machine Co.
MINERVA, OHIO

pipe would be excessive, however, amounting to around 1,000 feet, so we would recommend a discharge line not less than four inches in diameter. With a four inch discharge line a pump of 175 gallons per minute capacity against 200 foot head should give 60 pounds pressure at three one-half inch nozzles located 1,000 feet away from the pumps."

P. A. Royer, sales engineer of the American Well Works, also has some interesting information to present:

"The theoretical capacity of a one-half inch nozzle having 60 pounds pressure as the nozzle discharge is 57.8 gallons per minute. Therefore, the total capacity of the pump would have to be 173.4 gallons per minute, or approximately 175 gallons per minute.

"The friction of water thru two inch pipe at a flow of 175 gallons per minute would be approximately 65.25 feet pressure drop thru 100 feet of pipe, or 28.2 pounds per square inch. Therefore, for 1,000 feet of pipe the pressure drop would be 282 pounds and, as 60 pounds is desired at the discharge nozzle, the pressure at discharge of the pump would have to be at least 343 pounds, which, in our opinion, would be an excessive pressure to carry on two inch pipe.

"To overcome this excessive pressure difficulty, we would recommend the use of three inch pipe, instead of two inch, which has a friction loss of 2.85 pounds per square inch thru 100 feet of pipe, and the total friction loss would be 28.5 pounds in the 1,000 feet. The pressure at the discharge of the pump would have to be 28.5 pounds plus the 60 pounds desired on the nozzle, or approximately 88.5 pounds, which would not be an excessive pressure.

"In regard to the use of a reciprocating pump for this work, we find that in most cases a centrifugal pump will do the work just as well, and has many advantages, due to the fact that should the discharge of nozzles be cut off, excessive pressure in the discharge pipe will not be built up, and the pipe line be in no danger of breaking since the centrifugal pump builds up to a certain pressure and stops."

The Worthington Pump & Machinery Corporation has the following answer to the question:

"Approximately 57 gallons per minute will pass thru a one-half inch nozzle at 60 pounds pressure. This problem calls for three nozzles, and 171 gallons per minute will be required. Since there is only a two inch pipe leading from the standpipe to the nozzles, a friction head of approximately 420 pounds per square inch will be created by delivering 171 gallons per minute thru 1,000 feet of the two inch pipe. This would require a pump capable of delivering a discharge pressure of practically 500 pounds in order to give 60 pounds discharge at the nozzles. In order to withstand this pressure a special pipe would be required and of course the price of the pump on account of the high pressure would be relatively high. We would advise that at least a four inch pipe be used in order to reduce the friction head."

TRAINING 126 TO BE BRICKLAYERS

The Denver (Colo.) Opportunity School for Bricklaying, started only a few months ago, has since its inception enrolled 126 men who are desirous of learning the trade of bricklaying. Three-fourths of these men and boys have already been given employment by brick contractors, and the new class, which begins January 1, 1924, will total close to 150, it is said. The school guarantees every man who makes good a job. The class is in charge of W. F. Larsen, a bricklayer with 35 years' experience. J. J. Stein, executive secretary of the Colorado Clay Products Associations, assists Mr. Larsen in his work.

PAVE STREET WITH 20 YEAR OLD CLAY

Clay burned 20 years ago is being used to pave the streets of Rockdale, Tex. The material used is fire clay burned in the International Mine Co. slope when a briquette experiment was being made. When properly laid it packs as hard as concrete and is seemingly impervious to water, it is said.

Dryer, Transfer and Clay Cars, with Flexible Bearings.
Switches, Turntables and Track.

THE CHASE FOUNDRY & MFG. CO.
COLUMBUS, OHIO

CHASE

Increase the value of your product by improving the color with

LAVINO
BRAZILIAN MANGANESE

"Best for Face Brick"

Economical
Adaptable to any Clay
Intense Staining Powers
Various Effects Obtainable
Uniform Analytically and Physically

Liberal samples and full information gladly furnished upon request.

E. J. LAVINO and COMPANY

Bullitt Building Philadelphia, Pa.

Grinding Plant: Plymouth Meeting, Pa.

CAUCASIAN
OXIDE MANGANESE

Powdered—Granular
For Speckled Effects

PRECIPITATE
CARBONATE BARIUM

For Prevention of Scum
Thereby Producing
Deeper and Richer
Color

THE
ROESSLER & HASSLACHER
CHEMICAL CO.
New York

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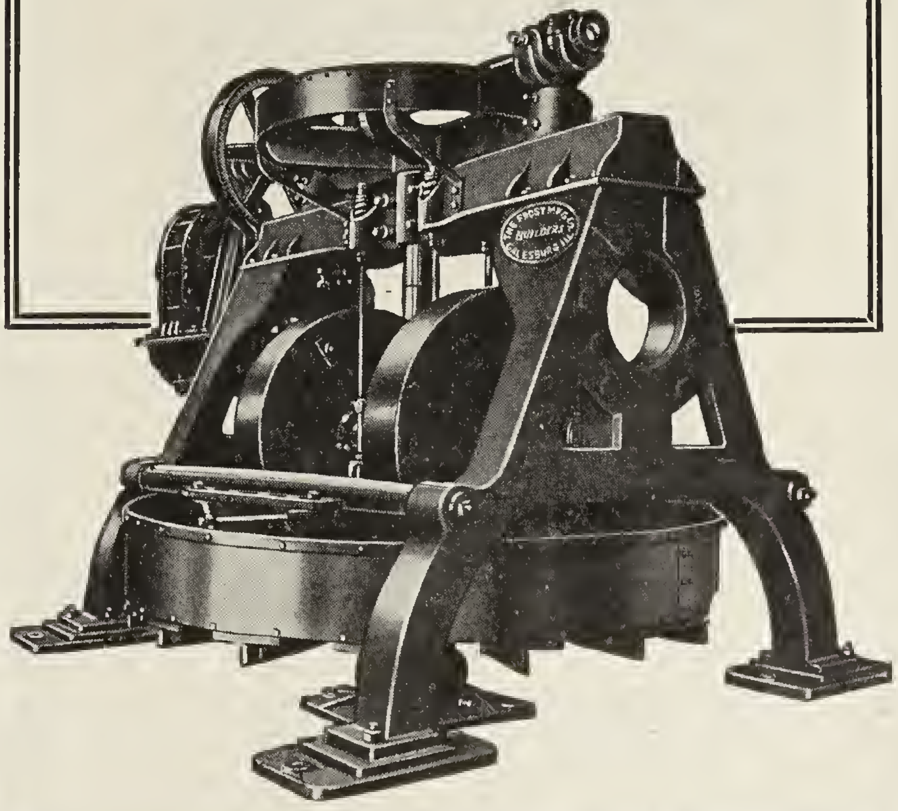
BETTER QUALITY WARE

That is the result when Frost Dry Pans are put on the job.

THE FROST MFG. CO.
GALESBURG, ILLINOIS



QUALITY ECONOMY SERVICE

You Do This But Once—

When you install ROBINSON KILN BANDS on your kilns. They will eliminate the chances of your kiln walls bulging and cracking, thus making them leak-proof. Many satisfied users in the industry.

Write for full data, also for catalog of clay machinery.

FRANK H. ROBINSON, Inc.

Dryer Cars and Clay Working Equipment

918-920 Behan St., N. S.

Factory and General Office PITTSBURGH, PA.

HY-GRADE MANGANESE CO.
WOODSTOCK, VA.

Miner and Grinders

Especially Prepared for Brick Making

Drawn from the Kilns

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clay Manufacturing

---

DEATH TAKES T. W. PEIRCE

Fiske & Co., Inc. of Watsontown, Pa. has announced the death of Thomas Wentworth Peirce, treasurer of that company, which occurred on November 22. Mr. Peirce's death has occasioned profound sorrow in the clay industry. He was a progressive and capable man and his passing is noted with much regret.

BEST BUSINESS IN HISTORY, SAYS SIBLEY

John W. Sibley, general sales manager for the Birmingham (Ala.) Clay Products Co., says that business with his company is the biggest in the history of the organization. Orders, he says, are being received right along.

SPENDS $10,000 ON PLANT

The Pell City (Ala.) Fire Brick Co. has just completed a new brick plant, which is now in operation. The kilns and buildings cost $10,000 to build. This new concern has a capacity of about 40,000 brick daily, and will increase this eventually to 50,000 brick daily. Additional kilns will be built next spring. At present about 50 men are being employed. H. S. Teal is president of the company.

PLANNING NEW ALABAMA PLANT

Following the recent discovery of an extensive deposit of valuable clay for brick manufacturing on property owned by A. Jackson near Jasper, Ala., it has been announced by Mr. Jackson that an outside company is planning the early establishment of a plant adjacent to the clay deposit that will have an initial capacity of about 35,000 brick daily. As yet, however, definite details of the project cannot be announced. The deposit discovered is of considerable length, and ranges in depth from three to five feet. Tests of the clay have shown it to be of good quality. The proposed plant, it is understood, will probably be established next spring.

ARKANSAS PLANT TO BUILD KILNS

Business this past year has been excellent for Arkansas Brick & Tile Co. This concern plans to increase kiln capacity at its Perla, Ark., plant.

MORE OF THAT CALIFORNIA OZONE

George S. Summerell, secretary-manager of the newly created California Common Brick Manufacturers' Association, makes the interesting assertion that one-quarter of all the brick made in the United States is manufactured in California, and then, for good measure, throws in the information that the second largest brick plant in the world, the Simons Brick Co., is located in Los Angeles. That makes some of the rest of the industry feel pretty small, but we must admit that Mr. Summerell—as the active executive of an association which has members in all parts of California and is growing rapidly—ought to know what he is talking about. Then, too, we should bear in mind that the factor of the well-known California atmosphere gives the brick manufacturers of that state an almost unfair advantage over those who have to manufacture brick with the aid of just ordinary air.

CLOSE MANTENO, ILL., PLANT

The Manteno, Ill., brick plant was closed for a fortnight while some minor repairs were being undertaken.

Blazing The Way To Decreased Fuel Consumption

The increasing application of the Russell Tunnel Kiln is the most convincing proof of the truth of our claims. Our first installation was made years ago when the belief was current that the periodic down-draft kiln was the peak of efficiency. Since that time labor and fuel costs have risen to exorbitant figures and the saving effected by a tunnel kiln assumes a still larger aspect. Large concerns have become responsive to every suggestion to conserve energy as its scarcity and cost become a more imminent problem.

The Russell Tunnel Kiln is serving the clay industry by greatly decreasing fuel consumption due to continuous operation. A few of the benefits that have followed in the wake of Russell Tunnel Kiln installations are:

(1) Fewer kiln losses because of uniform temperatures.
(2) Decrease in fuel consumption.
(3) Decrease in burning time.

Our Engineers will consult regarding your burning problems at your request

Russell Engineering Company
Boston ST. LOUIS New York

Russell

THE MINTER SYSTEM
200 Lbs. Coal per Ton of Ware

WE BUILD COMPLETE PLANTS or ANY PART

Nine of our Kilns will produce as much as 15 Kilns burned periodically — any product — any fuel. Saving first cost of six Kilns.

Ten of Our Recirculation Drier Tunnels will dry as much as fifteen old line tunnels. All ware dried evenly without strains. No loss, wrecks or other delays. Saving first cost of 6 tunnels and equipment.

Kilns and Drier can be adjusted to the highest speed that any material will stand. What could do more?

DON'T BUILD BEFORE YOU KNOW

The Minter System Plants are Producing the Cheapest Building Material made in America today.

The Minter System

HOME OFFICE
Albany, Georgia

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New York Belting & Packing Co.
Founded 1846 Incorporated 1856

Rubber Goods
for the Clay Industry

Test Special Rubber Belting
Indestructible Conveyor Belting
Elevator Belting
Firo Superheat Sheet Packing
Indestructible Sheet Packing
Cobbs Piston Packing
Steam Hose Water Hose
Pump Valves

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SIL-O-CEL
PREVENTS HEAT PENETRATION
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A CELITE PRODUCT

Kiln Insulation

CELITE PRODUCTS
BARRIERS TO INDUSTRIAL WASTE
SIL-O-CEL HEAT INSULATION
FILTER-CEL FOR FILTRATION
CELCOTE BOILER WALL COATING
FRAXITE HIGH TEMPERATURE CEMENTS

HEAT lost through walls and settings of uninsulated kilns increases production costs

1—by causing an excessive consumption of fuel;
2—by making it difficult to get high temperatures and hold them evenly;
3—by causing imperfectly burned ware, due to uneven temperatures.

SIL-O-CEL Insulation reduces production costs

1—by preventing heat waste, thus lowering your consumption of fuel;
2—by holding a uniform temperature within the kiln and so reducing the number of rejects;
3—by protecting the outer walls of the kilns from temperature strains, prolonging their life and saving repair bills.

Complete information on Sil-O-Cel Kiln Insulation gladly sent upon request. Write nearest office for Bulletin B-5A.

CELITE PRODUCTS COMPANY
New York 11 Broadway Chicago-53 W. Jackson Blvd. San Francisco-Monadnock Bldg.
Offices and Warehouses in Principal Cities
CELITE PRODUCTS LIMITED, New Birks Bldg., Montreal, Canada

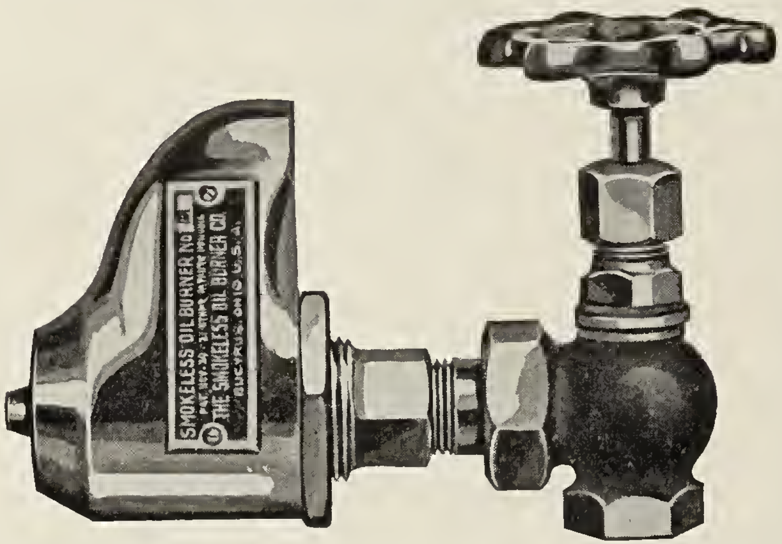
A New Year's Resolution:

To equip my plant to burn fuel oil the SMOKELESS way so to insure—

1. More brick than last year.
2. Better color brick.
3. Easier sale of product.
4. Larger profits.

Make this resolution come true by asking today for full particulars.

The Smokeless Oil Burner Co.
BUCYRUS, OHIO



Complete Oil Burning Systems

ROBBINS
Sectional Conveyors

have proven their merit in dozens of industries.

For your requirements in feeding your dry pans, they are the last word in efficiency.

Properly arranged, Robbins Sectional Conveyors and one man will feed your pans better than three or four men can do the job by the hand-shoveling method.

If your production lags or you have a labor shortage to contend with, let us show you some short cuts.

WRITE TODAY

Robbins Machinery & Supply Co.
444 W. Grand Ave. Chicago, U. S. A.
"Machinery for Moving Merchandise"

DECATUR TO START SUPPLY BUSINESS

A building supply department will be added to the manufacturing establishment of the Decatur (Ill.) Brick Co. A yard will be built adjacent to the face brick plant and the company expects to conduct the supply business with no increase in overhead. A trip to Cleveland, Ohio, will be made in the near future to inspect the very efficient building supply yards located there. C. F. Mattes, sales manager of the Decatur Brick Co., was very favorably impressed with the yard plan of the Cleveland Builders Supply & Brick Co., which was published in Building Supply News, recently.

FALLS CITY ENJOYS GOOD YEAR

The Falls City Brick Co., at Midway, Ind., between Jeffersonville and New Albany, has had a good first year in the business, the plant burning over 4,000,000 brick this year, and being ready now to burn the final 500,000 of the year. Orders taxed the capacity of the plant during the greater part of the season.

INDIANA FIRE INSURANCE LOWERED

The reduction in fire insurance rates in Indianapolis, for which the trade fought for nearly a year and which was authorized recently, has been accepted by the National Board of Underwriters and will go into effect January 1. The city is raised in classification from 2 to 1½. It means a saving of several thousand dollars a year in insurance premiums to the trade. At first, when the insurance commissioner announced his ruling, it was believed the companies and the National Board of Underwriters would fight the ruling, appealing to the courts.

STATE PLANT TO EXPAND

If plans are carried out the Kansas state penitentiary brick plant will have added equipment in order to enable it to make hollow brick or building tile.

LOUISVILLE BUSINESS SLOWER

Business has been slowing up just a shade with the Louisville, Ky., clay working plants as a result of the late season, and the fact that a good many large jobs are nearing completion, while several new jobs of size are slow in getting started. Several goodly sized buildings which will require brick and hollow tile will start building in early January. Business from now to the first of the year will not be especially heavy for the manufacturers, but will give them a chance to make repairs and accumulate some stock, altho some plants have business booked which will keep their delivery heavy well into the new year.

KNOB KNOSTER TO START AGAIN

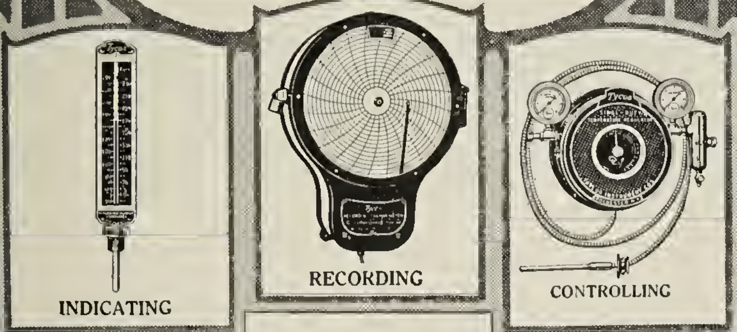
The Knob Knoster Brick plant of Warrensburg, Mo., will reopen about January 1 after having been closed down while some repairs and improvements were being made. It is stated that a new clay bin will be added.

CONNECTING ELECTRICITY WITH PLANT

The Wellsville (Mo.) Fire Brick Co. has just signed a contract with the Missouri Power & Light Co. for power and light for its plant and the wiring of the plant will be started at once.

LOOKS AFTER EMPLOYES' SOCIAL WELFARE

In keeping with the policy of the Fulton (Mo.) Fire Brick Co. to improve the conditions among its colored workers and their families, the company is one of the concerns of Fulton that has underwritten the fund to maintain a community nurse in Fulton. The city of Fulton and civic organizations also will contribute to the fund. The Fulton Fire Brick Co. during the past several months has inaugurated new and constructive ideas for the betterment of its workers in gen-



Tycos
temperature
instruments

"They Require the Minimum of attention; no repairs have been necessary to date; any required adjustments have been so simple that we have done them ourselves. We wouldn't have anything but *Tycos* Instruments."

You would say the same thing after installing *Tycos* Pyrometers for a year. Specify *Tycos*.

Literature of value to every engineer on request.

Taylor Instrument Companies
ROCHESTER N.Y. 858
There's a Tycos or Taylor Temperature Instrument for Every Purpose

Simple, Strong, Safe

There's the story of a Caldwell Tubular Tower. It is so simple that you can erect it yourself. It is so strong that it will endure cyclones and tornadoes. It conforms strictly with approved engineering principles. The cost is moderate.

If you want these qualities in a tower, equip yourself with a Caldwell Tubular.

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Incorporated
2380 Brook Street
Louisville, Ky.

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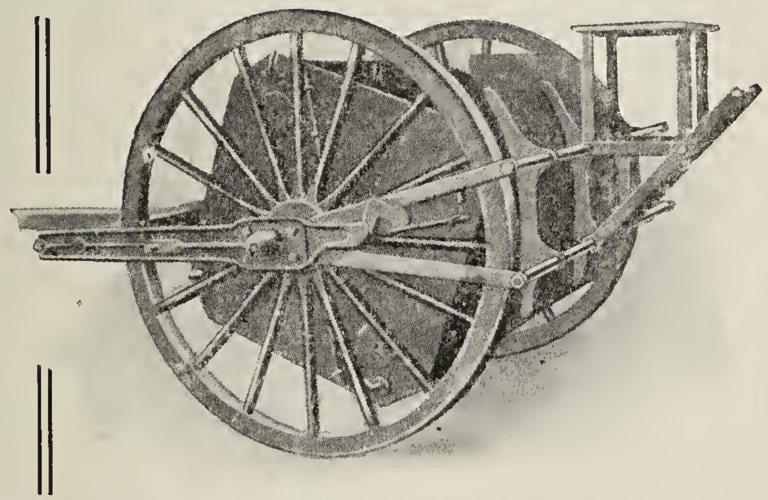
TANKS
AND
TOWERS

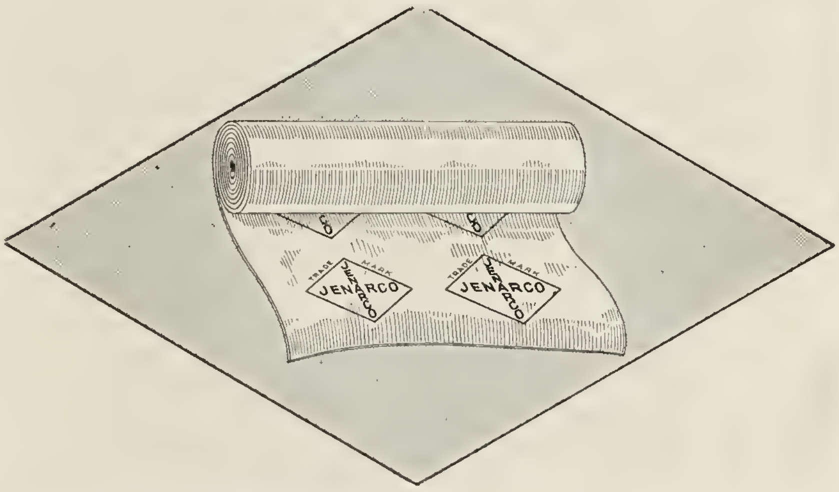


Covers the Ground
and
Gathers the Clay

at one half former cost. That is the experience of users of the Fernholtz Clay and Shale Gatherer thruout the country today.

Write for details of Fernholtz Equipment

Fernholtz Brick Machinery Company
ST. LOUIS, MO.



JENARCO
for tight joints—

JENARCO, a dark red vulcanized rubber packing is one of the several Jenkins Packings that makes leak-proof joints. For saturated steam, hot or cold water and other fluids. In sheets, rolls, or "ready-cut" gaskets.

Send to nearest office for Mechanical Rubber Goods Catalog, describing all Jenkins Packings, Pump Valves, etc.

JENKINS BROS.

80 White Street - New York
524 Atlantic Avenue - Boston
133 No. Seventh St., Philadelphia
646 Washington Blvd. - Chicago

JENARCO Jenkins Packing
96 JENKINS 96 JENKINS 96 JENKINS 96 JENKINS 96 JENKINS 96 JENKINS 96

RUBBER PRODUCTS of Merit

Time and experience have clearly demonstrated the merit of Quaker products.

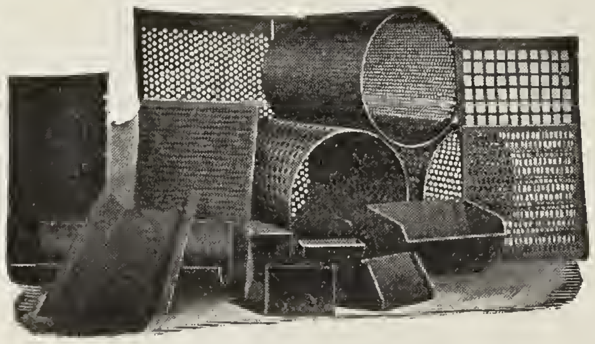
Over 37 years experience in manufacturing and handling rubber goods enables us to furnish the proper rubber articles required in the Brick and Clay industry which will give the best service.

Rubber BELTING—transmission, conveyor and elevator. HOSE for all purposes. ROD and SHEET PACKINGS, GASKETS and PUMP VALVES we manufacture in large quantities.

USE QUAKER PRODUCTS

Quaker City Rubber Co.
Mfrs. Mechanical Rubber Goods—Auto Tires and Tubes
PHILADELPHIA CHICAGO PITTSBURGH NEW YORK

HENDRICK SCREENS
FOR ALL PURPOSES



ELEVATOR BUCKETS
CONVEYOR TROUGH and FLIGHTS
STACKS, TANKS,
GENERAL SHEET and
LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL
PLATE CONSTRUCTION

Ask for your copy of the Perforated Metal Handbook

HENDRICK MFG. COMPANY
CARBONDALE, PA.
NEW YORK OFFICE: 30 Church St.
PITTSBURGH OFFICE: 544 Union Trust Bldg.
HAZLETON, PA., OFFICE: 705 Markle Bank Bldg.

eral and for closer and more sympathetic cooperation of all those connected with the plant, with the result that there has been much improvement in the friendly feeling between the employers and employes. A number of new homes were erected by the firm to provide places of residence for workers and the social features are being much stressed. The public nurse has been secured for a period of six months and the plan will be continued indefinitely if it proves a success during the trial period. Homes will be visited in all parts of the city and inspections in the schools also will be made regularly.

GREENPOINT MOVES TO NEW LOCATION

The Greenpoint Fire Brick Co. announces the removal of its plant to larger quarters, located at 373 Borden Avenue, Long Island City, N. Y. This company was formerly located at Clay and Oakland Streets, Greenpoint, Brooklyn. The Greenpoint Co. is an old establishment, having been doing business since 1867.

SEABOARD BUILDING TWO KILNS

Work has started at Charlotte, N. C., on the construction of two large additional kilns for the plant of the Seaboard Shale Brick & Tile Co., each of the kilns to have a capacity of 100,000 brick. The additional capacity is necessitated, officials of the company have advised, by the rapid growth of the business during the past two years.

TWO NEW KILNS FOR INDEPENDENT

Approaching close to double its capacity 18 months ago, the Independent Brick & Tile Co., Cleveland, Ohio, is preparing to start two new kilns, which are ready to burn as soon as other improvements at the plant, including new dryers, are completed. The Independent, under the personal management of Herbert F. Geist, president, is concentrating its production on backup tile.

SHAWNEE PLANT TO START JAN. 2

The Shawnee, Ohio, plant of the Ironclay Brick Co., of Columbus, Ohio, which has been closed down for several weeks on account of lack of water and later to make repairs will be placed in operation starting January 2. This company is receiving orders for shipment of face brick early in the spring and steps are being taken to operate the plant with a full force of workmen.

HOCKING VALLEY PLANT IMPROVING

The Hocking Valley Products Co., of Columbus, Ohio, which operates a face brick plant at Greendale, Ohio, is making a number of improvements at the plant including the installation of a rotary screen and the building of a new cutting table. It is expected that other improvements will be made from time to time, preparatory to active operation of the plant to make stocks for early spring shipment.

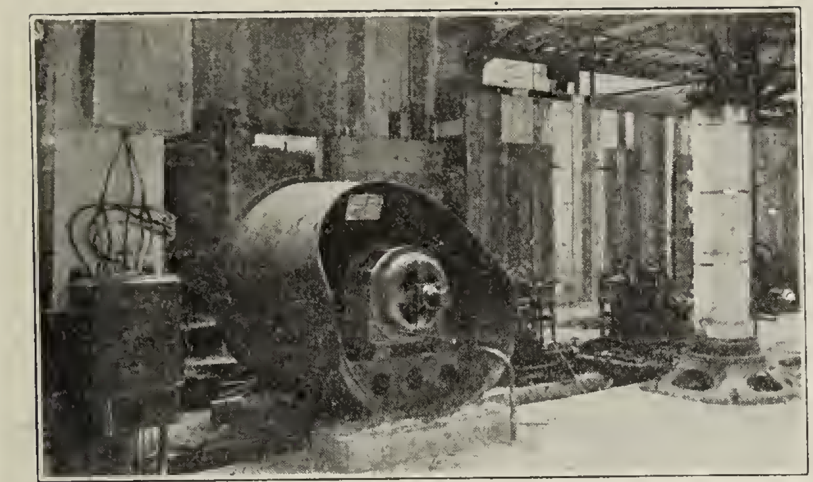
STRAWS WHICH SHOW THE WIND

The spring of 1924 will be one of the greatest in the history of Ohio, in the building life, according to T. P. Kearns, chief of the division of workshops and factories. Mr. Kearns announced that his department, during the month of November examined 113 plans for public, semi-public and private buildings that will be started early in the new year. This is an unusually large number for this time of the year.

THREE LOSE LIVES IN KILN CROWN COLLAPSE

Out of six men who went to sleep on top of a cooling kiln at the plant of the Everhard Brick Co., Massillon, Ohio, December 9, three died and three were injured more or less severely, when the top of the kiln caved in under their

Oil Fired Kilns



Require a Blower, Oil Pump and Heater as shown above.

When using our combination gas and oil burner, the blower is used for either oil or gas.

Ask for information regarding T-J System of Burning Oil.

Tate-Jones & Co. inc.

Furnace Engineers Established 1898

PITTSBURGH, PA.

New York — Boston — Buffalo — Philadelphia — Chicago — San Francisco — St. Louis

On an ERIE one man can do both the operating and firing, when the output required is not more than 200 to 300 cu. yds. a day.

"The ERIE increased our output 10%"

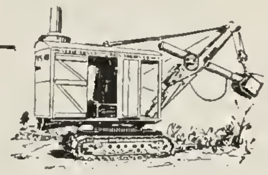
—"and OUR DYNAMITE COSTS HAVE BEEN CUT TO 1/3 of what they were before. The savings in labor and dynamite, alone, paid for the ERIE in its first year. It has given entire satisfaction." —*F. B. McFarrin, Gen. Mgr., Interprovincial Brick Co. of Canada, Inc., Toronto, Ont.*

For a reliable supply of raw material —you need an ERIE. Owners will tell you that the ERIE Shovel costs only 1/3 as much for upkeep, and saves 65 per cent. of the time ordinary shovels are tied up for repairs.

It pays to use equipment that is RELIABLE. Read the records made by 48 ERIE Shovels in clay, shale, rock, etc.—write for Bulletin B-70.

ERIE STEAM SHOVEL CO.,
Erie, Pa., U. S. A.

Branch Offices: Boston, New York, Phila., Pittsburgh, Atlanta, Chicago
Representatives throughout the U. S. A.



For working in a muddy pit, or traveling over rough ground—use the ERIE *lubricated* caterpillar type mounting. It saves considerable time, eliminating the need for planking under the shovel. Many other advantages of this *fully lubricated* mounting are interestingly described in our Bulletin B-60. Write for it.

ERIE Revolving Shovels

GUARANTEED! RELAYING RAILS

QUALITY SERVICE

New Rails
Relaying Rails
Frogs
Switches
Bolts, Nuts
Etc.

30% to 50% below price of new rails.

Shipped subject to inspection and approval at destination.

L. B. FOSTER CO., Inc.
Pittsburgh — New York

WAREHOUSES:
PITTSBURGH PHILADELPHIA JERSEY CITY HAMILTON, O.

Phone, Wire or Mail Inquiries, Given Immediate Attention

25,000 Tons in Stock

L·B·FOSTER CO·
PITTSBURGH-PENNSYLVANIA

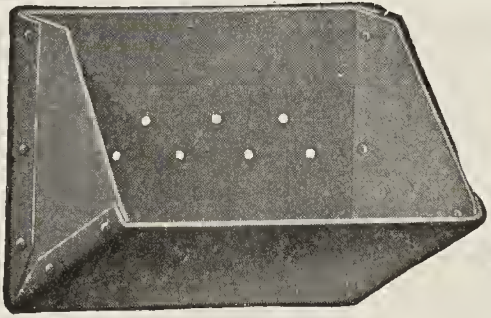


FIG. 133. Acute Heel Shelf Bucket, heavy duty, especially adapted for handling coal, stone, cement, ore, etc.

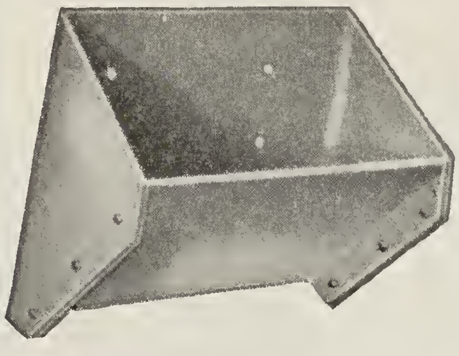


FIG. 1124. Trough Front, "Continuous Type" heavy duty steel bucket, used for variety of service conditions. Pours load instead of throwing it.

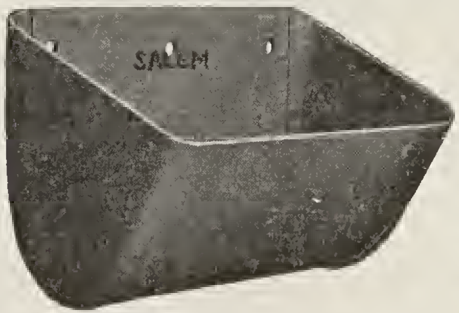


FIG. 668. "Salem." A heavy duty steel bucket; rounded contour throughout insures prompt, clean delivery; suitable for ores, coal, broken stone, etc.

SALEM
Genuine

Elevator Buckets

Since 1880, when Salem Buckets were awarded First Premium for superiority, no other make of bucket has approached the Salem in quality, long wear and unusual service. It is made in many different sizes and gauges of steel ranging from 24 gauge to 6 gauge, and is adaptable for handling materials of practically any size, shape or weight.

Our ability to furnish special buckets made up in accordance with your specifications enables us to offer excellent service and prompt delivery.

Write for Catalog 3625

MULLINS BODY CORPORATION
Successor to
W. J. CLARK CO.
101 Mill St., Salem, Ohio

Down With Winter Steam Troubles

You as a clay pit operator are looking for the most economical methods of handling your material in the pit. You want to eliminate the troubles and expense of unnecessary labor that comes with the steam shovel. Why drain hose lines, keep fires going, transport ashes or employ firemen when the economical Northwest Gas Crawler shovel brings the economy of gasoline and freedom from cold weather water troubles.

NORTHWEST ENGINEERING CO.
1224 Steger Bldg., Chicago, Ill.

NORTHWEST
GAS or CRANES·SHOVELS·DRAGLINES ELECTRIC

A Cure for One of the Worst of Dry Pan Troubles

Our Dry Pan Accelerator when placed in any make of dry pan will increase its capacity 25 to 40 per cent when wet or damp material is being used. When the material is dry the Accelerator will increase its capacity about 20 per cent.

The Accelerator is a simple but wonderfully efficient device, so working that it keeps the grates or screens clean and open, regardless of dampness of the material being used, and effectually prevents either dry or damp material from collecting on the outer surface of the grates next the rim. This coating beginning at the largest place of the screening surface reduces the capacity so much that by preventing this coating the Accelerator will often pay for itself in one day's run.

Full information: Description, price and terms furnished on application

Dry Pan Accelerator Company
Carthage, Illinois

combined weight. The men were negro tramps, it is thought, who came into the brick plant to seek protection from the weather.

City firemen were called to dig the men out of the kiln.

OHIO SPENDS MILLIONS FOR ROADS

During the fiscal year ended June 30, last, Ohio spent $12,702,731 for construction and maintenance of highways, according to the annual report of State Auditor Tracy. He said corrections in vouchers during the year saved the state $21,412.

The method now in use in Ohio in awarding road contracts on competitive bids was commended in the report, which declared the "cost-plus" system the most wasteful.

It was asserted in the report that road contractors must be permitted to make a "reasonable" profit, or a time will come when experienced contractors will not bid on jobs.

MAY SELL TWO BIG OHIO PLANTS

Receivers Arthur M. Crumrine and Samuel A. Kinnear of the Franklin Brick & Tile Co., of Columbus and the Burton-Townsend Co., of Zanesville, Ohio, two brick concerns which were subsidiaries of the R. L. Dollings Co., have prepared a lengthy report for the county, covering the operations of both plants for about four months. While the plants have been closed down because of lack of orders and an effort is being made to sell off the surplus stock, steps are being taken to sell them, it is said. In all likelihood the plants will be advertised for public sale shortly after the first of the year, it is reported. The report shows that both plants made some money under the receivers and that many repairs were made, putting them in good physical condition.

BAD WEATHER TROUBLES CUSHING PLANT

From 15,000 to 18,000 brick a day are being manufactured by the Cushing (Okla.) Brick Co. This company is expected to have a kiln ready to fire in a short time, provided good weather keeps up. 30,000 brick are required to fill the kiln of the Cushing Brick Co., and this number could have been made and burned some time ago, were it not for the excessive rainfall which filled the company's clay pits.

"FISKE" TRADEMARK NOW REGISTERED

Fiske & Co., Inc., Watsontown, Pa., have announced that the trademark "Fiske" has been duly registered in the U. S. Patent Office and is therefore the property of Fiske & Co., Inc. The company plans to uphold its copyrights.

HAZELTON PLANS ADDITIONAL KILNS

M. Friedlander, president of the Hazelton (Pa.) Brick Co. is considering adding several new kilns to the plant this winter. An unusual feature of this plant is the fact that anthracite coal is used to burn the brick.

GARFIELD IS MODERNIZING PLANT

It is reported that the plant of the Garfield Clay Co., Bolivar, Pa., is undergoing extensive repairs and additions. This is another plant that has fallen in line and has realized and appreciated the modern trend.

Five new dryers of the steam coil design are being put in. The draft is furnished by a large blower, driven by 60 horse power engine. Four of the dryers have four tracks and the fifth one has five tracks. The source of heat is exhaust steam from the boiler.

A new kiln, with insulated roof, has just been built. On one kiln, burning 70,000 brick, which has insulation in crown and bottom, a regular saving of 200 pounds per thousand brick has been made.

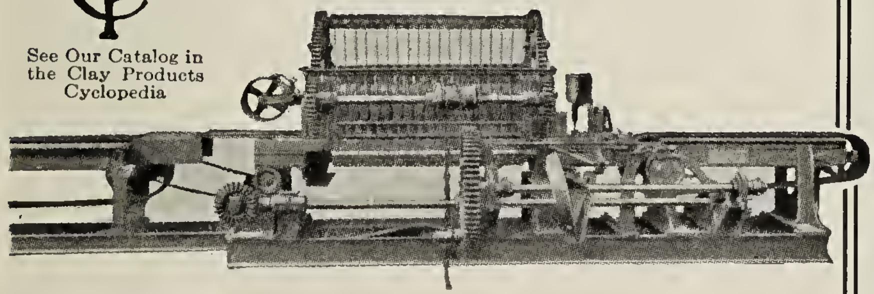
INSPECT THESE RECENT Installations of STEELE No. 18 CUTTERS

FALLSTON FIRE CLAY CO.,
Pittsburgh
PENNSYLVANIA CLAY CO.,
Pittsburgh
LANSDALE SHALE PRODUCTS CO.,
Lansdale, Pa.
VAN ORMER BRICK CO.,
Pitcairn, Pa.
WAYNE BRICK CO.,
Wayne, W. Va.
ADAMS PAYNE CO.,
Roanoke, Va.
STAUNTON BRICK CO.,
Staunton, Va.
SALISBURY BRICK CO.,
Salisbury, Md.
AMERICAN BRICK & TILE CO.,
Oklahoma City (Third cutter)
KNOXVILLE BRICK CO.,
Knoxville, Tenn.
CHEROKEE BRICK CO.,
Knoxville, Tenn.
HERTY TURP. CUP CO.,
Daisy, Tenn.
SALINA BRICK CO.,
Salina, Kansas
SAPULPA PRESS BRICK CO.,
Sapulpa, Okla.
ACME BRICK CO.,
Fort Worth, Tex. (4th cutter)
ALTON BRICK CO.,
Alton, Ill.
MEXICANA DE CUBAS DE ALBANAL,
Mexico City, Mexico.
CITY BRICK CO.,
Los Angeles.
ASHTON FIRE BRICK CO.,
Ogden, Utah.
TERRE HAUTE VIT. BRICK WORKS,
Terre Haute, Ind.
KENYON BRICK & TILE CO.,
Oklahoma City.
OWENSBORO (KY.) CLAY PRODUCTS CO.

and be convinced of their performance.

There are many others

See Our Catalog in the Clay Products Cyclopedia



J. C. STEELE & SONS

Statesville, North Carolina

Western Representative:
Geo. H. Smith, 3309 E. 37th Street, Kansas City, Missouri

Northern Agents:
The Manufacturers Equipment Co., Dayton, Ohio

"Our American Ring Pulverizer Saves Us $1,287 per Year Over the Dry Pan Method"

(From the report of Mr. George G. Lawson, Gen'l Supt. of the Northwestern Terra Cotta Co., Chicago)

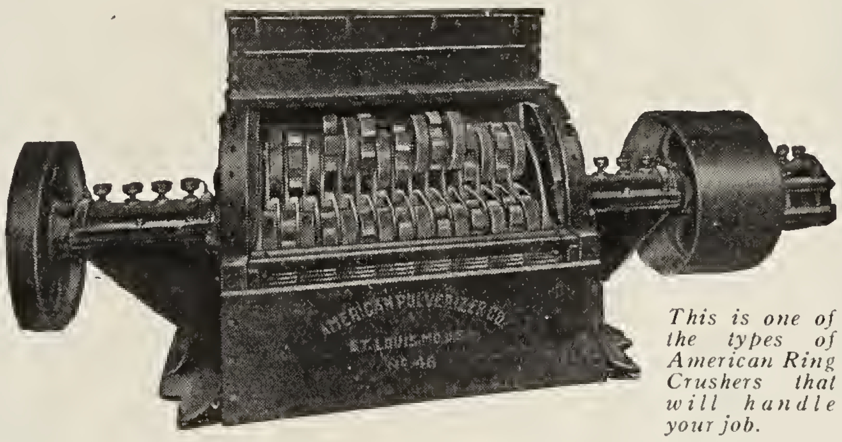
THE Northwestern Terra Cotta Company is the largest manufacturer of architectural terra cotta in the United States.

For 12 years it has been using a No. 36 American Ring Pulverizer to pulverize clay, containing from six to ten per cent. moisture.

American Ring Pulverizer

Its hourly output is ten tons or an amount equal to the output of two dry pans. Thus it saves at least one man's labor for feeding. In the words of Mr. Lawson, "it saves $1,287 per year over the dry pan method."

For long service, low overhead and real ability to handle clay, the American Ring Pulverizer is incomparable. We'd like to tell you just how it can bring new economies into your plant. Write for Mr. Lawson's report in detail.



This is one of the types of American Ring Crushers that will handle your job.

American Pulverizer Co.

"We Crush Everything"

18th and Austin **St. Louis, U. S. A.**

Ernest E. Lee Co.
115 S. Dearborn St.
Chicago

H. S. Riederer
92 Sickles Ave.
New Rochelle, N. Y.

M. A. Beltaire, Jr.
805 Hammond Bldg.
Detroit

NATURE SUPPLIES

the right materials to meet existing conditions. The sharp branches of the jungle do not scratch the skin of the tiger, nor do the cold winds of the North injure the polar bear.

Excessive repair expense and long delays do not arise when you apply the proper steel to your machinery parts. Advise us of the conditions under which the parts operate—having had more than 180 years' experience in the iron and steel industry we believe we can be of service in the solution of your problems.

Mail coupon for our free booklet — "Putting the Right Steel on the Job."

Service Department

TAYLOR-WHARTON IRON & STEEL CO.

HIGH BRIDGE, N. J.

Service Dept.,
Taylor-Wharton
Iron & Steel Co.,
High Bridge, N. J.

Gentlemen:
Without obligation on my part, please mail me your booklet, "Putting the Right Steel on the Job".

Name..............................

Address..............................

MAIL COUPON TO-DAY

NORTHWEST COMPANY OPENS NEW OFFICE

The Washington Brick, Lime & Sewer Pipe Co. has announced the opening of a new office in Seattle, Wash., at 825 Seaboard Bldg., which will be in charge of Willis E. Clark, the district manager.

TACOMA PLANT NOW OPERATING

John Buffelen, organizer of the Tacoma Tile & Brick Co. at Ruston, Wash., recently announced that the new plant would be in operation on December 15 and that brick will be ready for shipment by January 15. As previously announced, this company has taken over the abandoned brick yard at Ruston, entirely remodeling it. Electric equipment has been installed thruout and special features put in to make the highest grades of modern brick and tile. In order to keep the clay supplies dry, special facilities have been added.

MAY BUILD FIRE BRICK PLANT

Deeds for the transfer of five parcels of property at Round Bottom, W. Va., recently were filed by Attorney Stanley B. Wilson, Moundsville, W. Va., for A. H. Kerr, Burgettstown, Pa. It is understood the property will be utilized as a site for a cement plant and a furnace lining brick works, erection of which will be undertaken within the near future by a company now in process of organization.

STANLEY PLANT BUYS LOCOMOTIVE

A gasoline locomotive has been purchased by the Stanley (Wis.) Red Pressed Brick Co. for use in its yards and for transporting loads across the Chapman Lake trestle to the main line.

WYOMING ADDS TO CLAY FAMILY

Announcement has been made of the incorporation of the Midwest Clay Products Co., at Caspar, Wyo., with a capital stock of $100,000. The incorporators are Ray Harding, Albert Amiotte, Alfred Brile, W. C. Settle and Fred Holder.

KENNEDY VISITS BRAZIL, IND.

Thomas Kennedy of the Dominion Sewer Pipe Co., Swansea, Ont., has just returned from a visit to Brazil, Ind.

DALZELL GIVEN IMPORTANT JOB

A. G. Dalzell has been appointed to represent the Canadian National Clay Products Association on the Canadian Engineering Standards Association.

BUILDS NEW FLOWER POT PLANT

A company from Seattle has built in South Vancouver, B. C., a new clay products plant to manufacture flower pots. Flower pots have heretofore been imported from Ontario and Alberta. 80,000 flower pots at one burn is said to be the capacity of the plant. Fort Haney and the Fraser River furnish the raw material—clay and a small part of sand.

PLAN PLANT FOR ONTARIO

J. Diffen, Welland, Ont., and R. W. Wright, Dunkirk, N. Y., will establish a plant at Port Colborne, Ont., for the manufacture of brick and are asking for equipment.

CLAY MEN TO MAKE SAND-LIME BRICK

Hinde Bros., Toronto, Ont., have purchased the sand-lime brick plant of Schultz Bros., Brantford, and are moving it to Toronto. Hinde Bros. have been operating a clay brick plant but as the clay is running short and they have an unlimited quantity of good sand they decided to install a sand-lime brick plant. The Schultz plant is modern and in good condition and will have a capacity of 20,000 per day.

"Proctor"

DRYING
MACHINERY

for

Electrical Porcelain,
Pottery, General Ware,
Saggers, Sanitary Ware,
Enameled Ware, Chemical
Stoneware, Face Brick,
Grinding Wheels, Conduit,
Refractories, Tile, etc.

—and the experience of leading manufacturers of all these products proves that "Proctor" Dryers pay for themselves quickly and repeatedly, by speeding up production, reducing loss and cutting cost. When you decide to improve **your** drying facilities, our 40 years' dryer-engineering experience will guide you to the best and most economical equipment.

PROCTOR & SCHWARTZ
INCORPORATED
PHILADELPHIA, PA.

We are looking
for a Man—

We want to get in touch with a ceramic man that recognizes the *need* of measuring and recording temperatures, but feels that the market does not provide equipment that is satisfactory.

If You Qualify in accordance with the above specifications and will get in touch with us, we will make a study of your plant, and offer to make a trial installation and prove to you that Wilson-Maeulen Pyrometers will help you in assuring low operating costs and uniform high quality of output.

Remember Please there are no strings to this offer. Getting in touch with us costs you but the price of a letter; but if you qualify (better read the first paragraph again) and do not communicate with us, it may cost you much—it is costly—it is profit wrecking—to flounder in the Sea of Temperature.

WILSON-MAEULEN CO.
Makers of Rockwell Hardness Testers
and Wilson Maeulen Recording Pyrometers
731 EAST 143RD ST. NEW YORK

More Important than the Plumb Line

WHAT the plumb line is to the brick *layer*, a Thwing Pyrometer is to the brick *burner*.

Imagine what a brick wall would look like if nobody kept constant check on the way the bricks were laid!

The *making* of bricks calls for even *more* exacting watchfulness. The burners must be on the job all the time. To aid burners—to make their work exactly right, hundreds of brick plants depend upon Thwing Pyrometers.

Thwing Pyrometers keep a constant check on temperatures at every stage of the burn, fostering as nothing else can, uniform production at lower cost and greater speed. Write for information and evidence that a Thwing installation is an actual economy.

Thwing PYROMETERS
THWING INSTRUMENT COMPANY
3347 Lancaster Ave.
PHILADELPHIA, U. S. A.

150

NICHOLSON ENTERTAINS C. N. C. P. A. OFFICIALS

J. W. Nicholson of the National Fire Proofing Co. of Canada, Limited, entertained the executive meeting of the Canadian National Clay Products Association at dinner at the Engineers' Club, Toronto, on December 12.

Machinery and Equipment

Devices and Methods, New and Old Concerning Which Information of Interest to the Clay Manufacturer Is Published

INTERESTING NEW EQUIPMENT

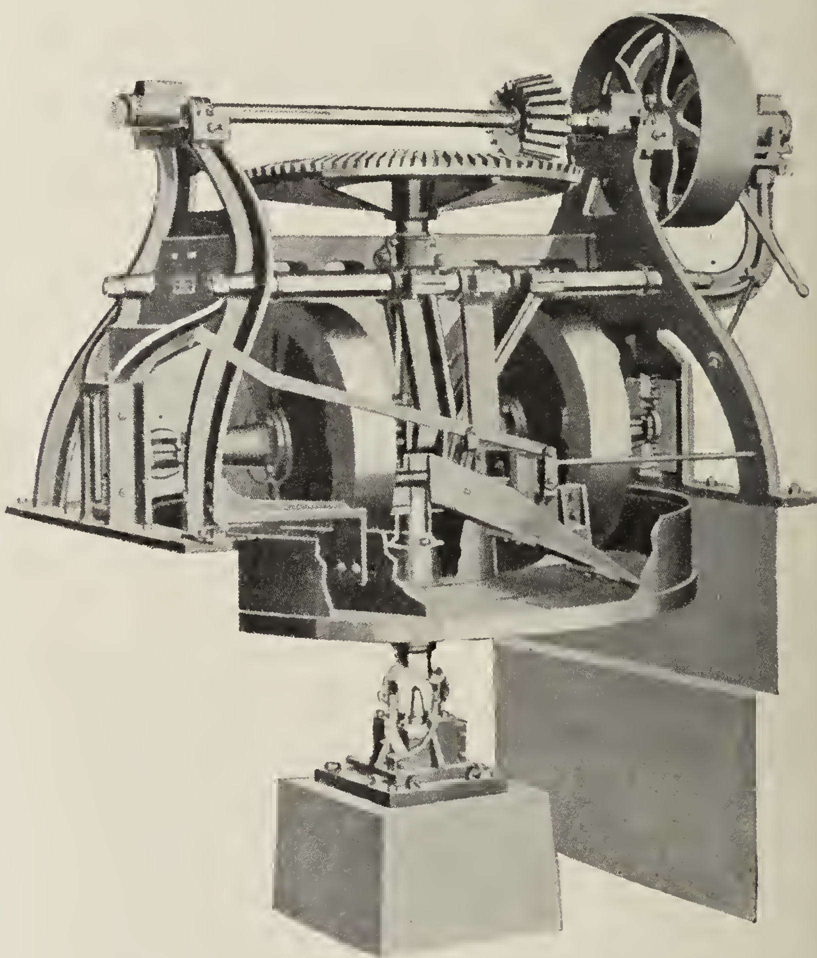
The Stevenson Co. has lately put on the market a new all-metal sewer truck for handling the ware on pallets known as A-31. This has a side lift, and the leverage is 11 to 1. One of the special features of this truck is that it is adjustable to width, taking three sizes of pallets for pipe from 18 to 36 inches in diameter.

This new truck is equipped with either Timken roller bearings, or anti-friction sleeve bearings, and can be equipped with Alemite lubrication.

⁂

NEW DRY PAN PERFECTED

The Stevenson Company has also put into operation recently one of their new heavy duty wet pans, with an improved unloading device. This device is arranged so that it moves up and down in a vertical line, and does not need a man on the other end of a shovel handle to unload the pan.



Dry Pan Equipped with New Unloading Device

A lever on the outside of the pan is controlled by the operator, so that this unloading device or shovel can be dropped part of the way to the bottom of the pan, or all the way, just as the operator sees fit. The fact that the operator does not have to stay on the end of the shovel handle is a big advantage, as it reduces the amount of labor necessary and the time of unloading the pan. This point will be appreciated very much by all who use a wet pan in their plants.

The Ideal Machine for the Smaller Plant

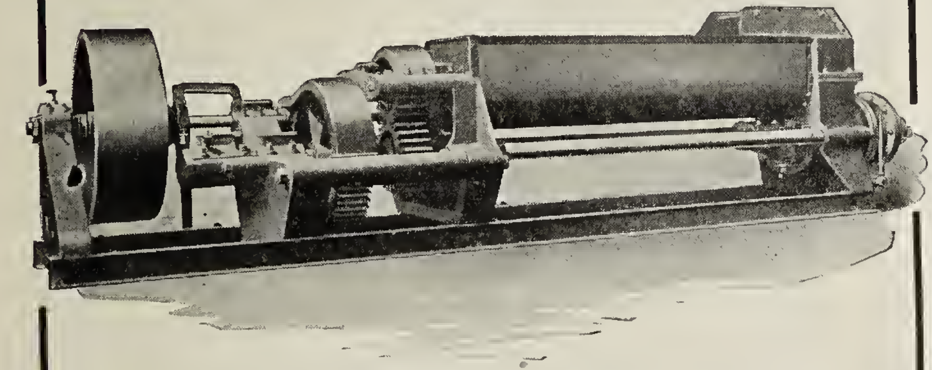
For plants manufacturing both tile and brick, no machine will give greater satisfaction—all the way through—than the Freese Union Machine.

It has a forced feed into the auger, giving a steady, uniform clay column—so important in the manufacture of tile, and of considerable advantage in the manufacture of brick.

It is inexpensive to install—eliminating the structural work necessary to support a separate pug mill—

And it is economical to operate—its one set of gears and one driving belt creating less friction, consuming less power, and requiring less repairs.

It is the ideal machine for the smaller plant.



Freese Union Machine

E. M. Freese & Company
Galion, Ohio

Dependable Machinery of Proven Efficiency

Why Handicap Your Ware—

You may have good clay—a thoroughly mixed column—and an efficient machine, but what about the ware turned out? Is it quality ware which will compete with others on the market, or is it "Handicapped" by being imperfect and running largely to culls?

Imperfect ware has about the same chance on the market as some crippled people in life. They are both handicapped.

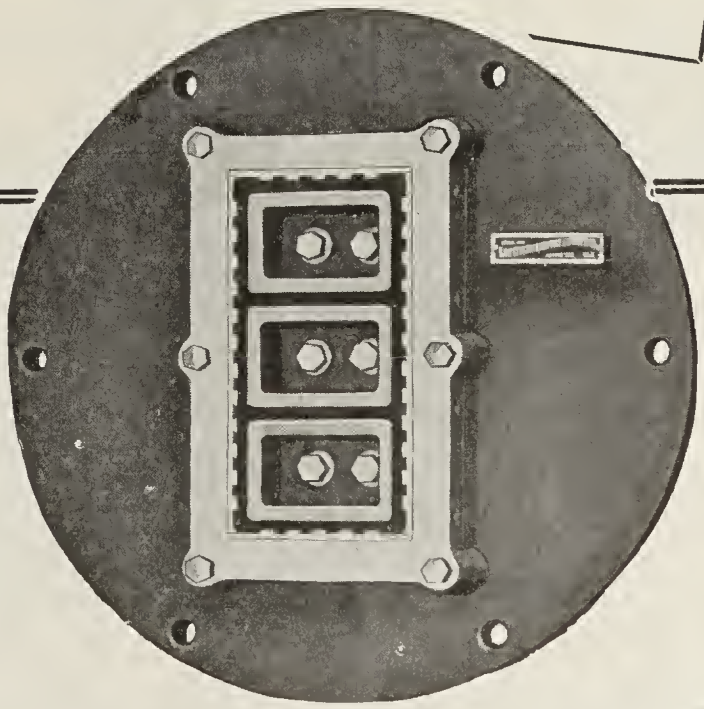
An output of quality ware can be brought about only when the die thru which it is formed is correctly designed and built.

Louisville Dies are BUILT TO FIT—BUILT TO LAST—BUILT TO PRODUCE QUALITY WARE ALWAYS.

—The LOUISVILLE MACHINE—
MANUFACTURING CO.
LOUISVILLE, OHIO

We Manufacture Hand Cutting Tables, Piano Wire Screens, Friction Winding Drums, Conveyors, Elevators, etc.

"IF IT'S DIES YOU WANT WE MAKE 'EM"



"GIVING GOOD SERVICE"

Writes Mr. J. H. Mussel of the Danville Brick Company, Danville, Illinois, in regard to their Missabe Dipper.

"We have been using their screen plates for a number of years and shall continue to use them.

"The American Manganese Steel Company are always ready to serve you with—

WHAT YOU WANT WHEN YOU WANT IT

"It is a pleasure to do business with them"

Screen Plates for Dry Pans
Tires or Rims for Dry and Wet Pans
Tread or Mueller Plates
Pug Mill Knives

Gears and Pinions
Chains, Sprockets and Elevator Buckets
"Missabe" Dippers, Teeth, Racks and Pinions

USE AMSCO STEEL CASTINGS for SERVICE

AMERICAN MANGANESE STEEL COMPANY

General Sales Offices:
393 East 14th Street, Chicago Heights, Ill.
Foundries:
Chicago Heights, Ill.—New Castle, Delaware—Oakland, Calif.

"Missabe" Manganese Steel Dipper

Among Our Advertisers

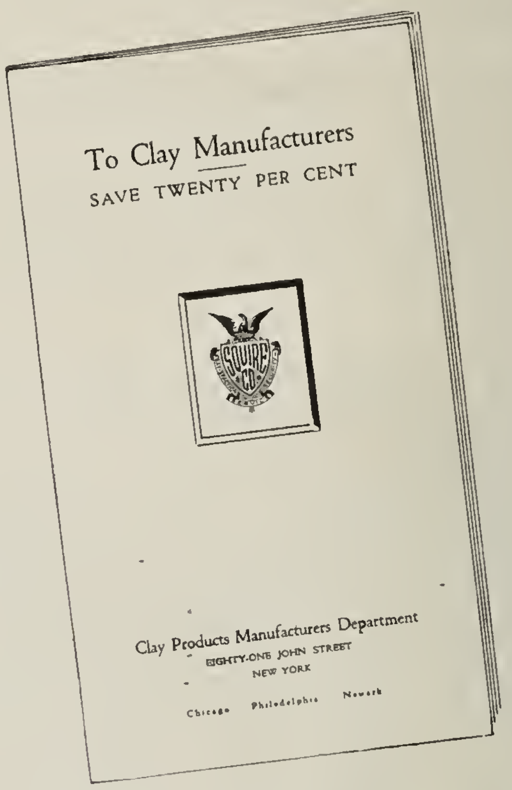
Details Concerning New Models, Changes in Personel, News Matters, etc., That Our Advertisers Believe Will Interest Our Readers

CLAY PLANT INSURANCE

Numerous clay plants are without proper and sufficient insurance mainly because of the excessive cost of such rates. An analysis, however, of the basic rates applied by various insurance rating organizations show that these rates do not reflect properly the low fire loss record of the clay products industry.

Mutual or co-operative insurance has been discussed among several of the clay products associations, but the individual associations are rather limited as to membership and nothing definite toward insurance has ever been done by any association.

The formation of the Clay Products Manufacturers Department of the Squire Co., Inc., 81 John St., New York City, has solved the problem of insurance in the clay industry. This company consulted old established mutual companies and were fortunate in prevailing upon them to establish a separate division of their business to be devoted to the clay industry exclusively. As a result of this arrangement clay manufacturers are afforded an opportunity to insure their plants at a saving of at least 20 per cent. in a company specializing in insurance for clay plants. Many of the large and prominent clay product manufacturers are strong advocates of this arrangement.



To Clay Manufacturers
SAVE TWENTY PER CENT

Clay Products Manufacturers Department
EIGHTY-ONE JOHN STREET
NEW YORK
Chicago Philadelphia Newark

This Booklet Will Give You More Details of the Insurance Plan

⁂

MORE SHOVEL DETAILS AVAILABLE

The Marion Steam Shovel Co., Marion, Ohio, has just issued two new booklets, which are designated as Bulletins 308 and 309, describing two of their many models of excavating shovels.

Bulletin 308 is devoted to a Model No. 37—one and three-quarter yard revolving steam shovel. Bulletin 309 explains the construction and features of Model 21, electric and gasoline-electric three quarter yard revolving shovel and crane.

Both of the bulletins go into extensive details, showing every point about the construction and the decided advantages of this equipment. Every one who uses an excavating shovel should obtain one of these bulletins whether or not they are operating a Marion shovel at this time.

Leading Clay Journal of the World

BRICK and CLAY RECORD

Vol. 63, No. 13 Chicago, U. S. A. December 25, 1923

Published Every Other Tuesday at 407 S. Dearborn Street, Chicago. Subscription Price $3.00 per year. Entered as Second Class Matter January 2, 1911, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

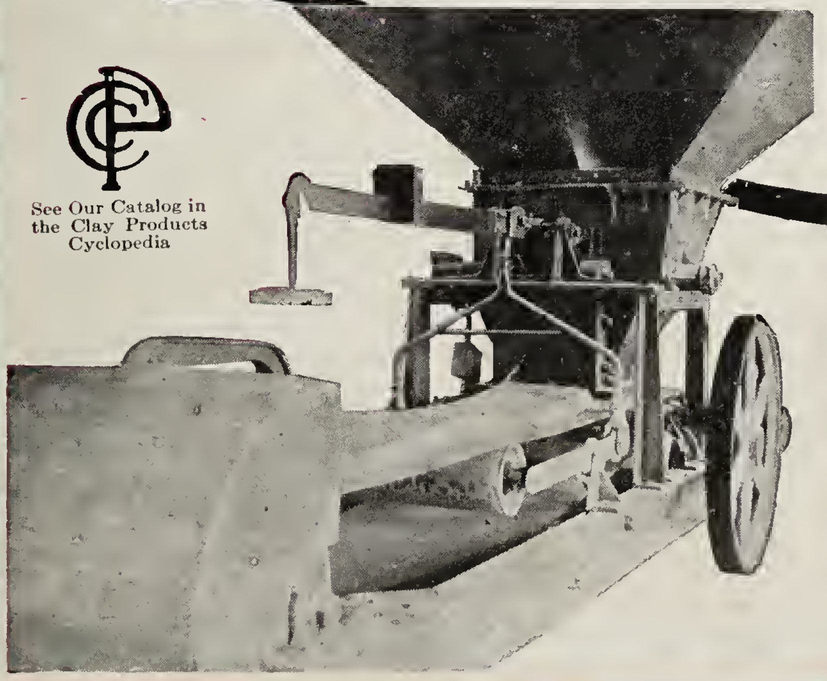
TY OF ILLINO
EC 27 1923

S E CO E

One Of The Sights You *Must* See In Los Angeles

Howard Frost wants you to see his wonder plant, the Los Angeles Pressed Brick Company, while attending the Convention, February 11, 12, 13, 14, 15 and 16. You will find there several POIDOMETERS which, without a word, will speak for themselves and be their own best salesmen, showing you how to DECREASE YOUR COSTS, INCREASE YOUR OUTPUT, and ELIMINATE BREAKAGE back home in your own plant. . . . .

See Our Catalog in the Clay Products Cyclopedia

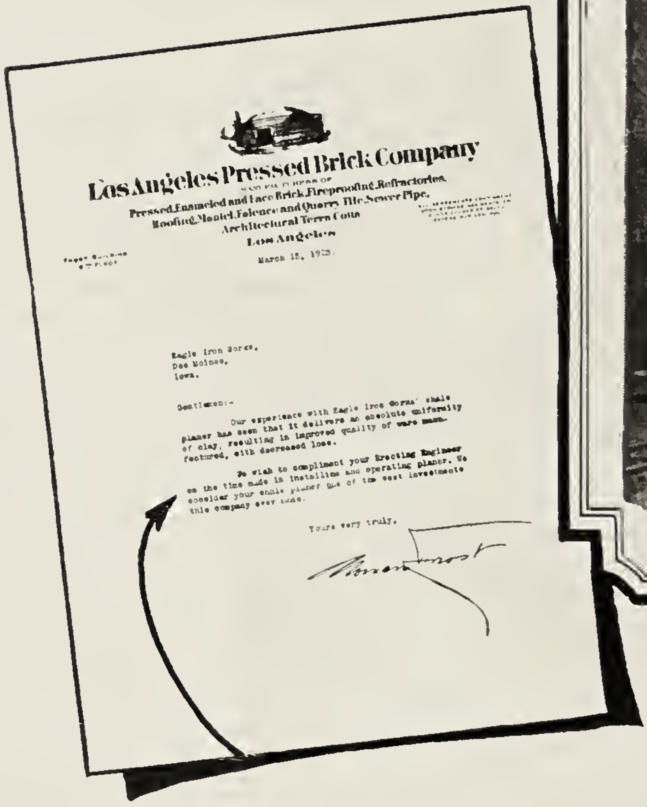


The POIDOMETERS *are anxiously awaiting your visit.*

SCHAFFER ENGINEERING
and EQUIPMENT COMPANY
2828 Smallman St. - PITTSBURGH, PA.

POIDOMETER

HAPPY NEW YEAR



Los Angeles Pressed Brick Company
MANUFACTURERS OF
Pressed, Enameled and Face Brick, Fireproofing, Refractories,
Roofing, Mantel, Faience and Quarry Tile, Sewer Pipe,
Architectural Terra Cotta
Los Angeles

March 15, 1923.

Eagle Iron Works,
Des Moines,
Iowa.

Gentlemen:-

Our experience with Eagle Iron Works' shale planer has been that it delivers an absolute uniformity of clay, resulting in improved quality of ware manufactured, with decreased loss.

We wish to compliment your Erecting Engineer on the time made in installing and operating planer. We consider your shale planer one of the best investments this company ever made.

Yours very truly,

Howard Frost

Let An EAGLE Shale Planer Pay Your Expenses to Los Angeles

WHEN YOU WATCH THIS "EAGLE" IN ACTION,

just imagine it's in your pit and act on the impulse you will get

See Our Catalog in the Clay Products Cyclopedia

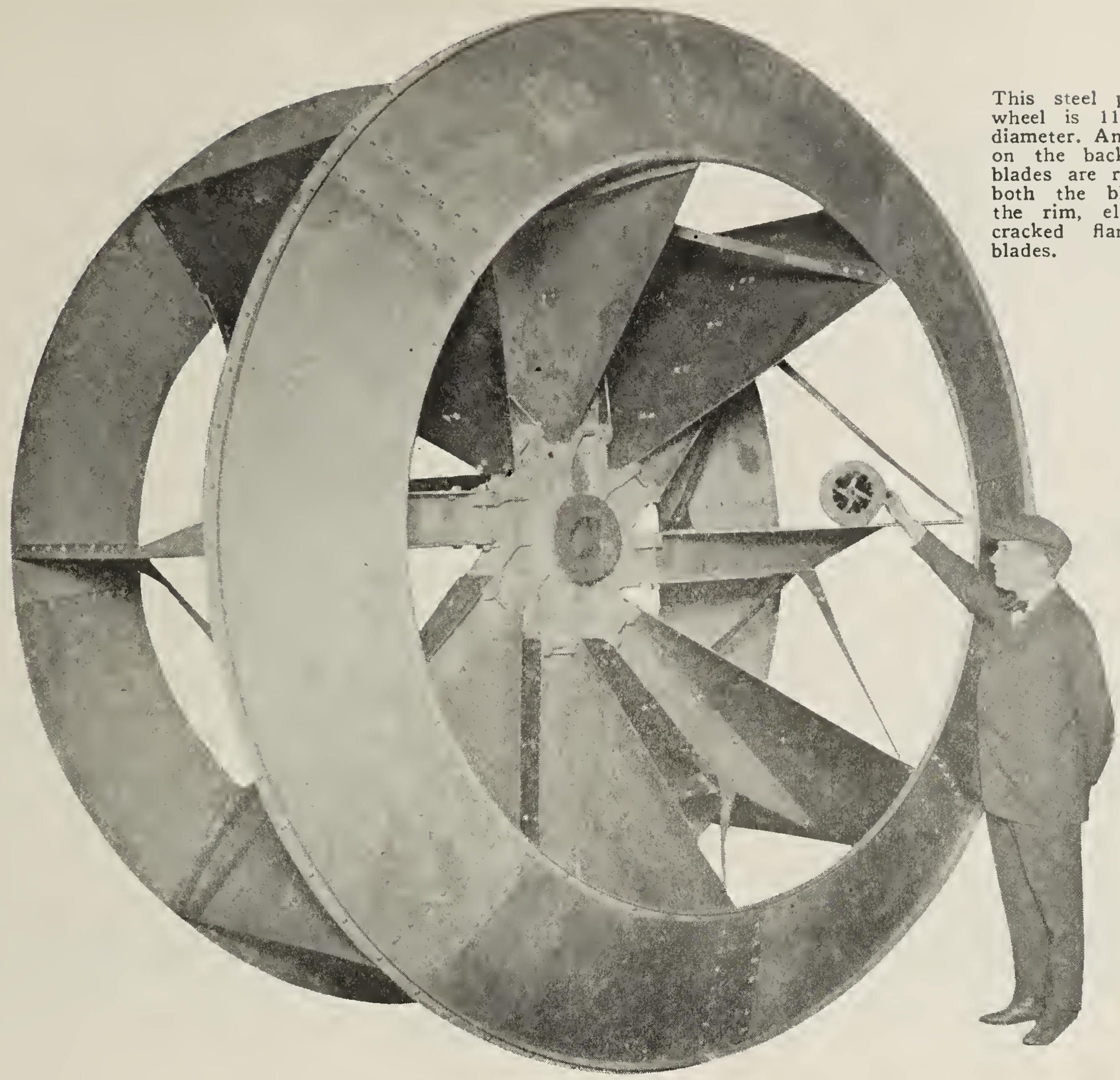
Part of your trip will be a visit to the plant of the Los Angeles Pressed Brick Company where you will see an Eagle Shale Planer living up to the statement of Howard Frost, President of the above company—

> ***"One of the best investments this company ever made."***

There's another Eagle Planer waiting to do the same for you and to reduce your costs so much that it will pay the cost of your trip to Los Angeles in a short time.

Eagle Iron Works, Des Moines, Iowa

EAGLE Shale Planer



This steel plate fan wheel is 11 feet in diameter. Angle irons on the back of the blades are riveted to both the blade and the rim, eliminating cracked flanges or blades.

Proof against dust and fumes—

HERE is a fan for kiln acceleration that will keep going with the least attention.

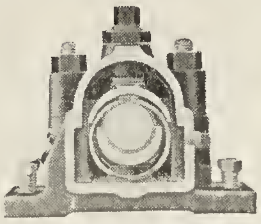
The rugged construction insures it, and the self-aligning, protected bearing insures it.

The Clarage Steel Plate Fan Wheel—the popular fan for brick making—is stronger part for part. By using a machined metal flask in casting the I-beam arms into the iron hubs, perfect alignment is assured so that it is not necessary to weaken the joints by bending the arms when the wheel is assembled. Throughout the wheel is heavily braced and securely riveted.

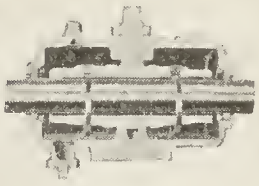
The Clarage Bearing measures up to the high standard of the Clarage wheel. The view opposite illustrates the easily replaced inner sleeve which rests in a ball socket permitting self-alignment, and when adjusted the entire bearing is held securely in place by heavy through bolts. Note the felt washers that retain the oil and keep the dirt out.

There is a size and type of Clarage Fan or Fan Wheel for every application presented in making brick and allied products. Clarage Bulletins tell the whole story. Write for them.

The Famous Clarage Bearing



The view above shows the set screws, giving micrometer adjustment for height. Below is shown the self-aligning sleeve oil rings and felt washers. Note large oil reservoir.



Complete stocks carried in New York and Pittsburgh, special stocks in Memphis.

NEW YORK CITY
DETROIT
INDIANAPOLIS
PITTSBURGH
CHICAGO
ST. LOUIS

CLARAGE
FAN COMPANY

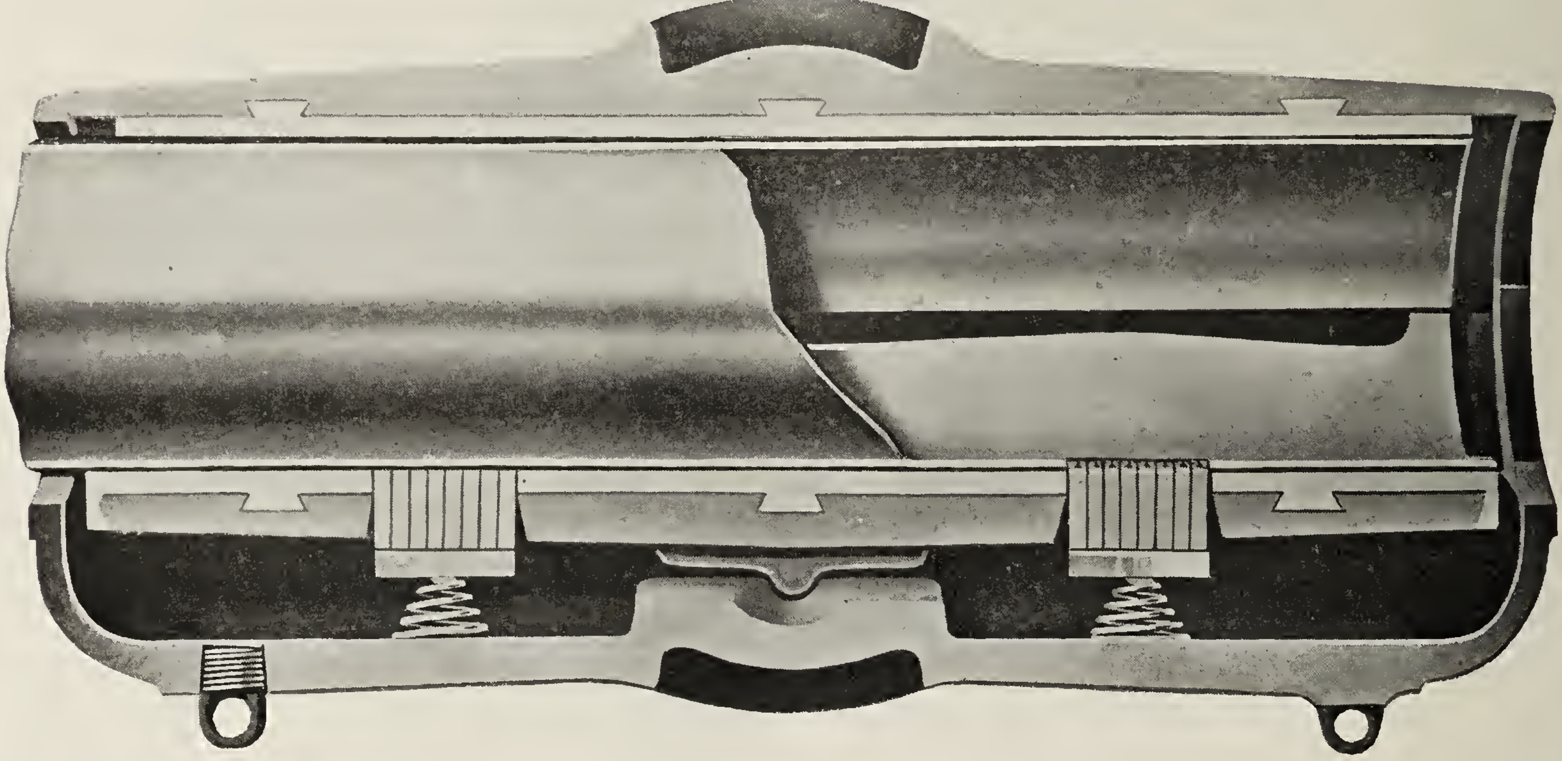
DENVER
CLEVELAND
PHILADELPHIA
MINNEAPOLIS
LOS ANGELES
ROCHESTER, N. Y.
BOSTON

FANS - ENGINES - AIR WASHERS

KALAMAZOO, MICH.

DODGE

POWER TRANSMITTING EQUIPMENT



What about your power investment twenty years from now?

Read what these users say—

After 21 years service—

"Our experience leads us to believe that Dodge Capillary bearings are the most dependable of all types for continuous service."

Running at 2300 R.P.M. for ten years—

"This line shaft (2300 R.P.M.) has been operating for ten years and during that time we have not had any trouble."

Ten years service—never a hot bearing

"We are glad to state that your capillary bearings continue to give satisfaction. We have never had a hot bearing where they have been used."

A Dodge capillary bearing will be in every respect as efficient and economical after twenty years' service as when first installed. That is proved by actual performance records under average operating conditions.

You want a time tested bearing—one that will protect your investment for many years. Performance of the past is a safe guarantee of the future.

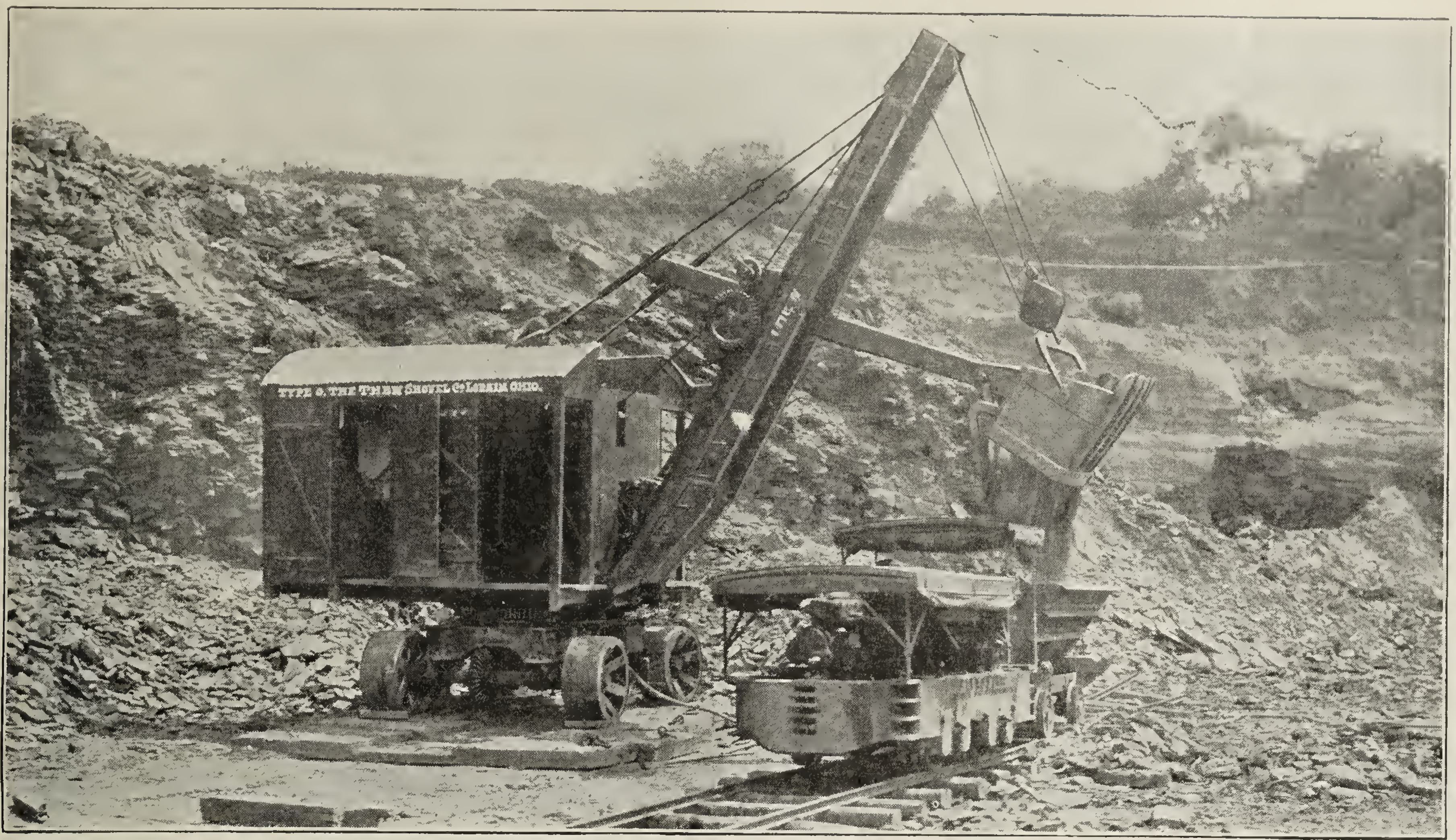
Lubrication by capillary attraction is positive and unfailing. An absolutely uniform and unbroken film of CLEAN lubricant is constantly maintained between shaft and liner. There are no moving parts in the capillary bearing — hence no churning of the oil — dirt settles to the bottom, where it belongs, and stays there.

An installation of Dodge capillary bearings represents a moderate first cost—insures low upkeep and substantial dividends in power savings. Buy them from your local Dodge dealer on the immediate delivery basis.

Dodge Manufacturing Corporation

General Office: Mishawaka, Indiana Works: Mishawaka, Indiana and Oneida, N. Y.

NEW YORK PHILADELPHIA PITTSBURGH BOSTON CINCINNATI NEWARK CHICAGO ATLANTA
MINNEAPOLIS ST. LOUIS HOUSTON SEATTLE SAN FRANCISCO



Brick Wanted!

Are you prepared to meet the demands of the builders? Looks as if the demand will keep up through the fall and winter.

Fall is here. That means many rainy days. Days unfavorable for men to work in the pits. Unless you get a means of digging your clay or shale, other than hand labor, it will be impossible to keep up production.

The machine for your pit is the Thew Electric. Operated by one man at low cost it is the most economical means of obtaining the raw material. Weather has no fears for it. Rain or shine the Thew is always on the job.

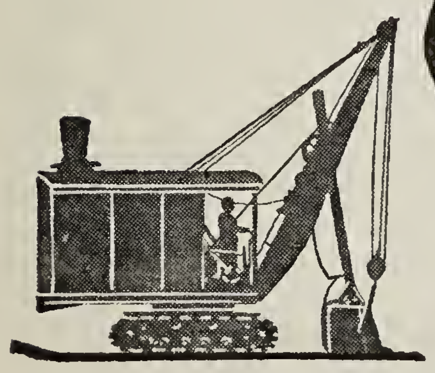
Get your Thew now and know that the problem of digging your clay or shale is forever solved.

Thew Brick Yard Shovels are built in three popular sizes equipped with either traction or continuous tread mounting. One of them will meet your requirements.

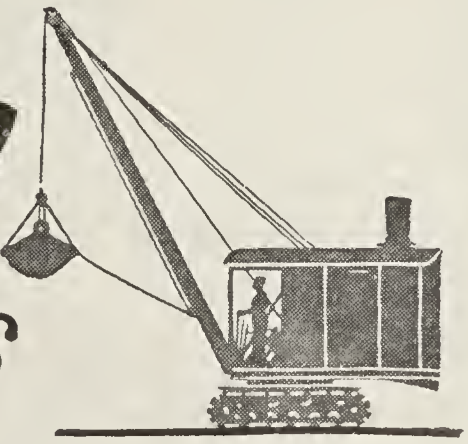
What is your output?

THE THEW SHOVEL COMPANY, LORAIN, OHIO

EXPORT DEPARTMENT
ALLIED MACHINERY COMPANY OF AMERICA



Thew
Power Shovels



For A Happy and Prosperous New Year

EQUIP YOUR PLANT WITH

TORONTO CLAY MACHINERY

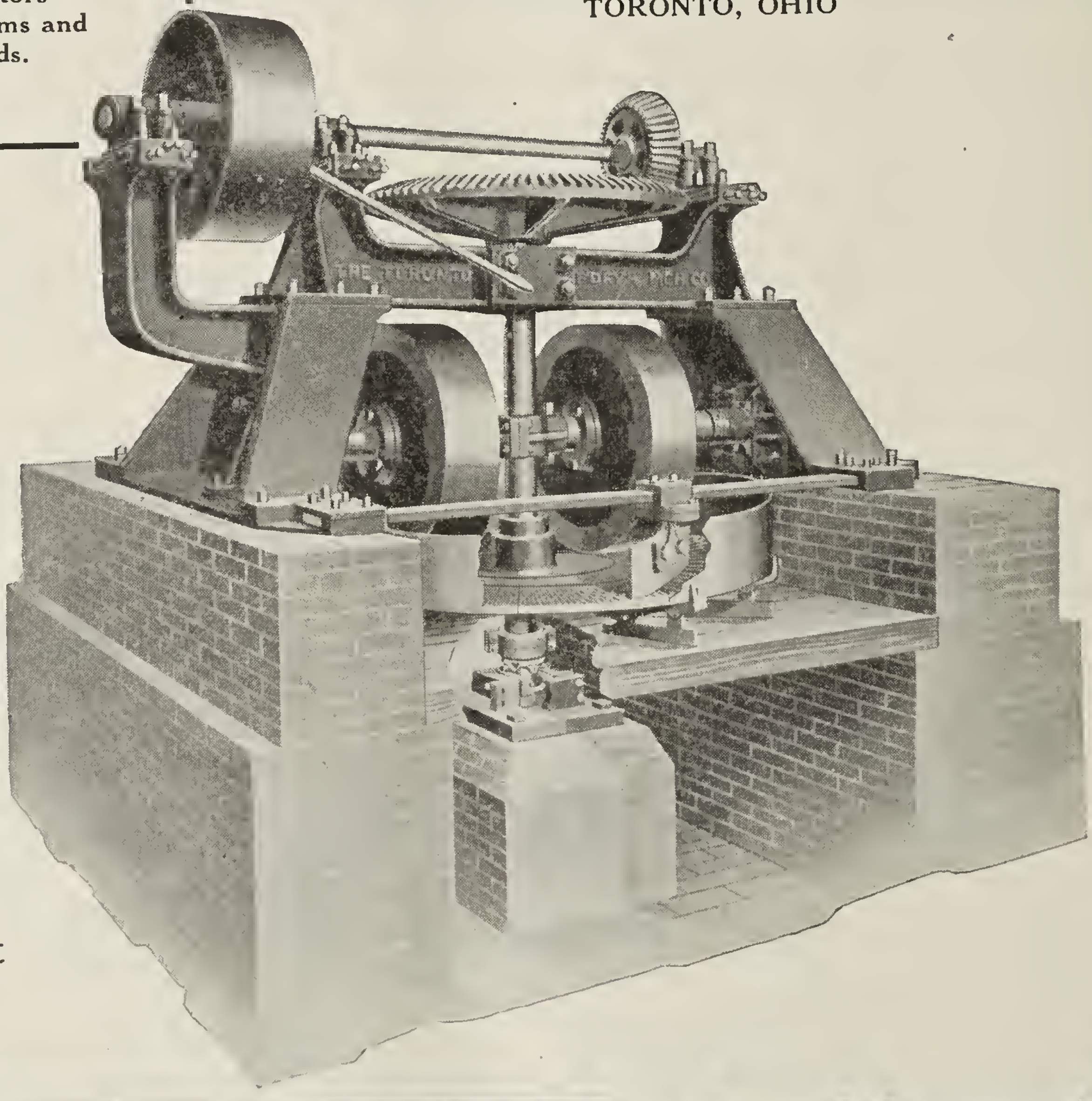
- Wet Pans
- Combination Pans
- Dry Pans
- Sewer Pipe Presses
- Tile Presses
- Wet Clay Elevators
- Dry Clay Elevators
- Clay Conveyors
- Crushers
- Pan Feeders
- Dies
- Trucks
- Barrows
- Platform Wagons
- Kiln Cranes
- Gigs
- Ring Cutters
- Pug Mills
- Screens
- Gravity Elevators
- Power Elevators
- Cradles, Drums and Socket Boards.

Well studied details make TORONTO EQUIPMENT

STRONGER
MORE DURABLE
MORE SERVICEABLE
THOROLY RELIABLE

Descriptive bulletin covering any of the equipment listed at the left will be gladly sent upon request.

The Toronto Foundry & Machine Co.
TORONTO, OHIO



Toronto Equipment IS Reliable

See Our Catalog in the Clay Products Cyclopedia

Dedicate 1924 To "*LET'S GO*"

Greetings

For the Good-will you have shown us in the Past—*We Thank You.*

We sincerely hope that the spirit of good-will and confidence which has existed between us may continue and strengthen throughout the New Year, and for many years thereafter. Accept our cordial best wishes for a very Merry Christmas and a full measure of Peace, Happiness, and Prosperity during 1924.

THE STEVENSON COMPANY
General Office and Works: WELLSVILLE, OHIO

248 Russ Bldg.
San Francisco, Calif.

81 Victoria St.
Toronto, Ont.

Monadnock Bldg.
Chicago, Ill.

See Our Catalog in
the Clay Products
Cyclopedia

CRUSHERS
FEEDERS
DRY PANS
WET PANS
ELEVATORS
SEWER PIPE
and TILE
MACHINERY

STEVENSON
CLAY MACHINERY

WHAT THEY HAVE DONE

—*not what we say they will do*

In presenting to you equipment that is vital to the economical operation of your plant you are naturally more impressed by the engineer who can tell you what his equipment has done in similar plants than you are in one who can only tell you what it will do for you.

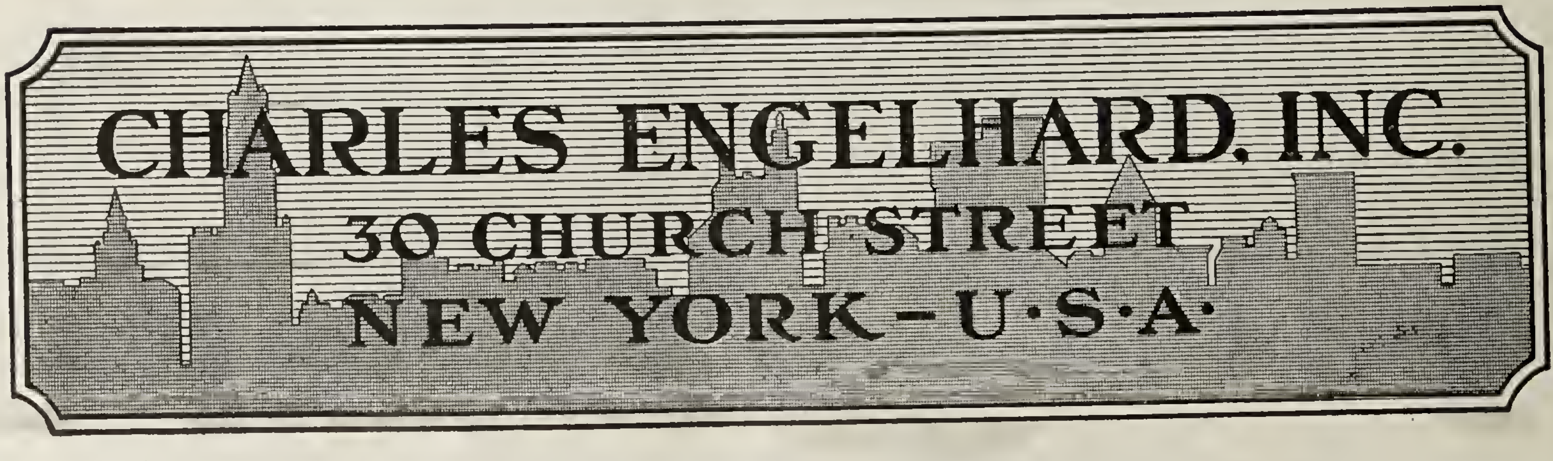
ENGELHARD PYROMETERS

are presented to you on the basis of their years of performance in brick plants. When customers, who have had our pyrometers many years make such statements as

> **"Saving in time of approximately 25 per cent.—corresponding saving on fuel and labor."**
>
> **"We have been using equipment steadily for so long that we have almost forgotten how it would be to be without it—It saves time, coal, labor, and produces better ware."**

then **you** can visualize what an equipment of Engelhard Pyrometers would do for you. Our experienced engineers are at your service. You incur no obligation in asking for advice or a quotation. It would surely be worth your while to do so.

One man who bought in 1915 wrote us in 1923, **"No single investment in our plant pays bigger dividends."**



CHARLES ENGELHARD, INC.
30 CHURCH STREET
NEW YORK-U·S·A·

KOEHRING SHOVEL

Capacity—plus

GREATER mobility, and the Koehring Heavy Duty construction that does away with capacity-cutting breakdowns and delays beyond question give Koehring Shovels the greatest *actual* capacity.

Ability to "keep on the job" at the top capacity operation without punishment to any part of the Koehring Shovel means a great gain in month-by-month, year-by-year volume handled. Easily changed for crane excavator and dragline work.

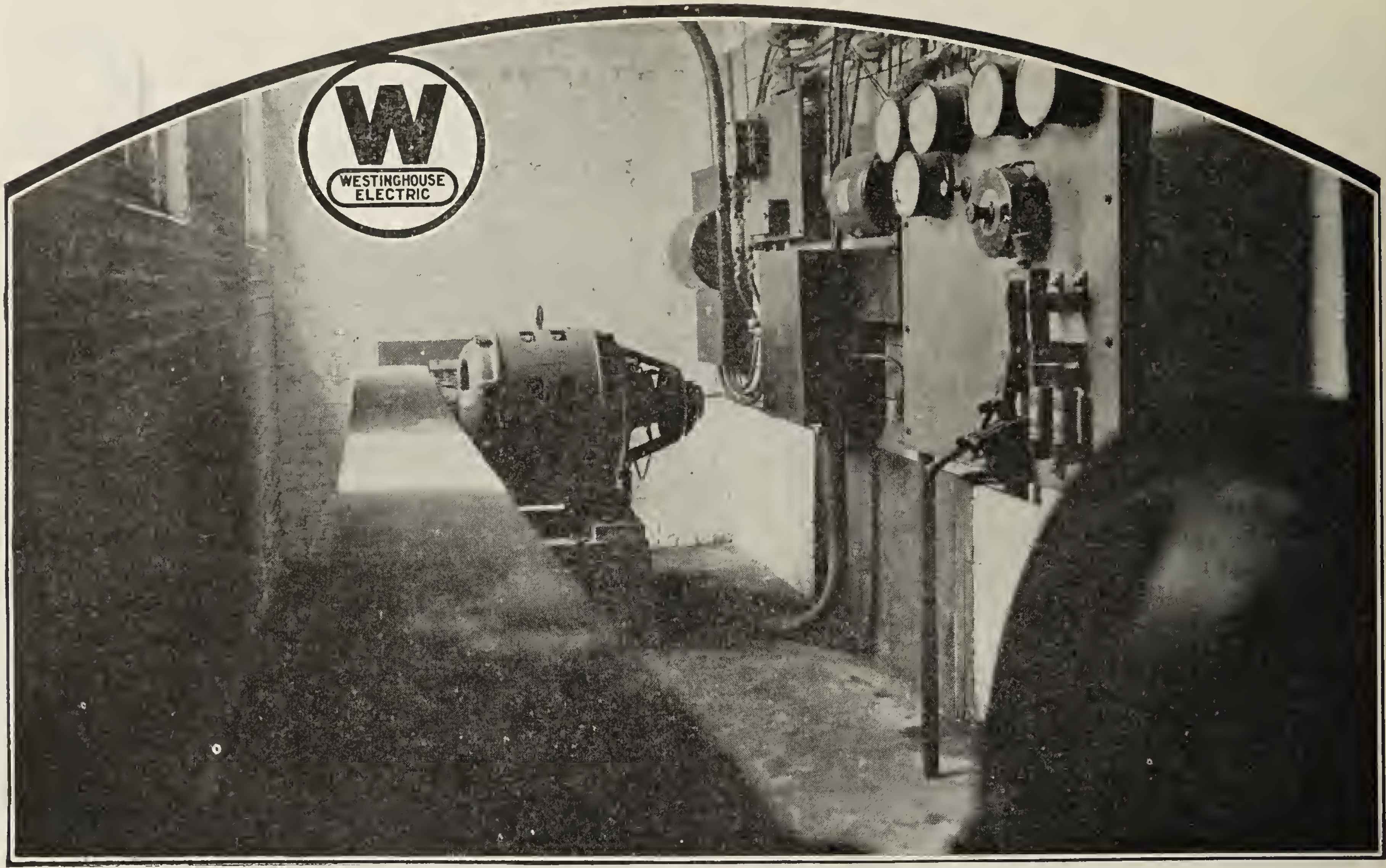
Capacities

No. 1.	3/4 cu. yd. struck measure.
No. 2.	1 1/4 cu. yd. struck measure with 20 1/2 ft. boom.

KOEHRING COMPANY
Manufactures of Concrete Mixers, Cranes, Draglines and Shovels
Sales and Service Offices in all Principal Cities
MILWAUKEE, WIS.

Foreign Department, Room 1370, 50 Church Street, New York City. ***Canada,*** Koehring Company of Canada, Limited, 105 Front Street East, Toronto, Ontario. ***Mexico,*** F. S. Lapum, Cinco de Mayo 21, Mexico, D. F.

KOEHRING HEAVY DUTY



Time Decides

for or against

Twelve years ago the Kenilworth plant of the National Brick Company was electrified—by Westinghouse. This installation has been successful—as twelve years' satisfactory operation has demonstrated.

Time has revealed that Westinghouse motors possess the brute strength and dependability required in motors for any brick plant operation. They possess more than ample power for the hard starting and the heavy peak loads that are common to the brick plant.

In the light of time, Westinghouse electrical equipment has proved more dependable and less expensive to maintain than steam equipment.

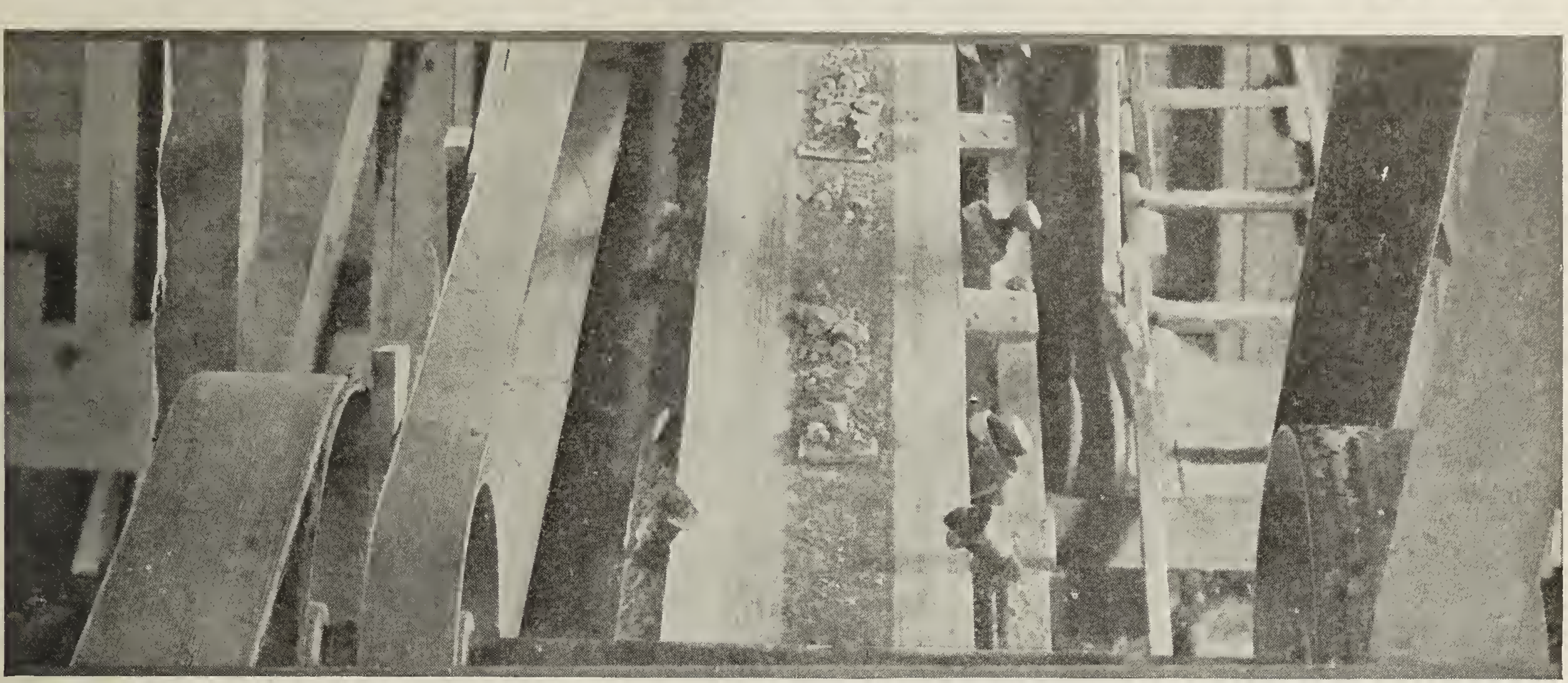
Time has shown that the life of Westinghouse equipment exceeds that of steam equipment and that it retains, throughout its entire life, its high initial efficiency with but a fraction of the care and attention bestowed upon steam equipment.

It will obligate you in no way to discuss your power problems with a Westinghouse engineer.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of the
United States and Foreign Countries

Westinghouse

GANDY BELT *is* TOUGH



One GANDY Leads to Another

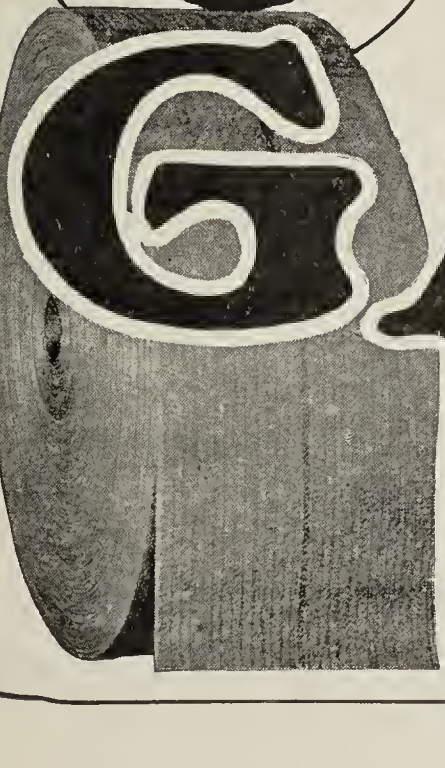
THIS 24 x 6 ply Gandy cup Conveyor, owned by the Carolina Shale Brick Company, has been in service nearly eight months now and still looks good as new. A short time? It has already lasted longer than two previous installations of another make of belt. The Gandy was installed because the Carolina folks had used Gandy and Thermo-Gandy belts in another plant and found them best. The fact that they bought this belt proves it.

Gandy Belts give best service on rough work because they are built of best materials by workmen who know how to build good belting. Gandy Belts last longer because they are tough. They will save money for you on your Main Drives, General Transmission, Elevators and Conveyors. Just try one Gandy Belt.

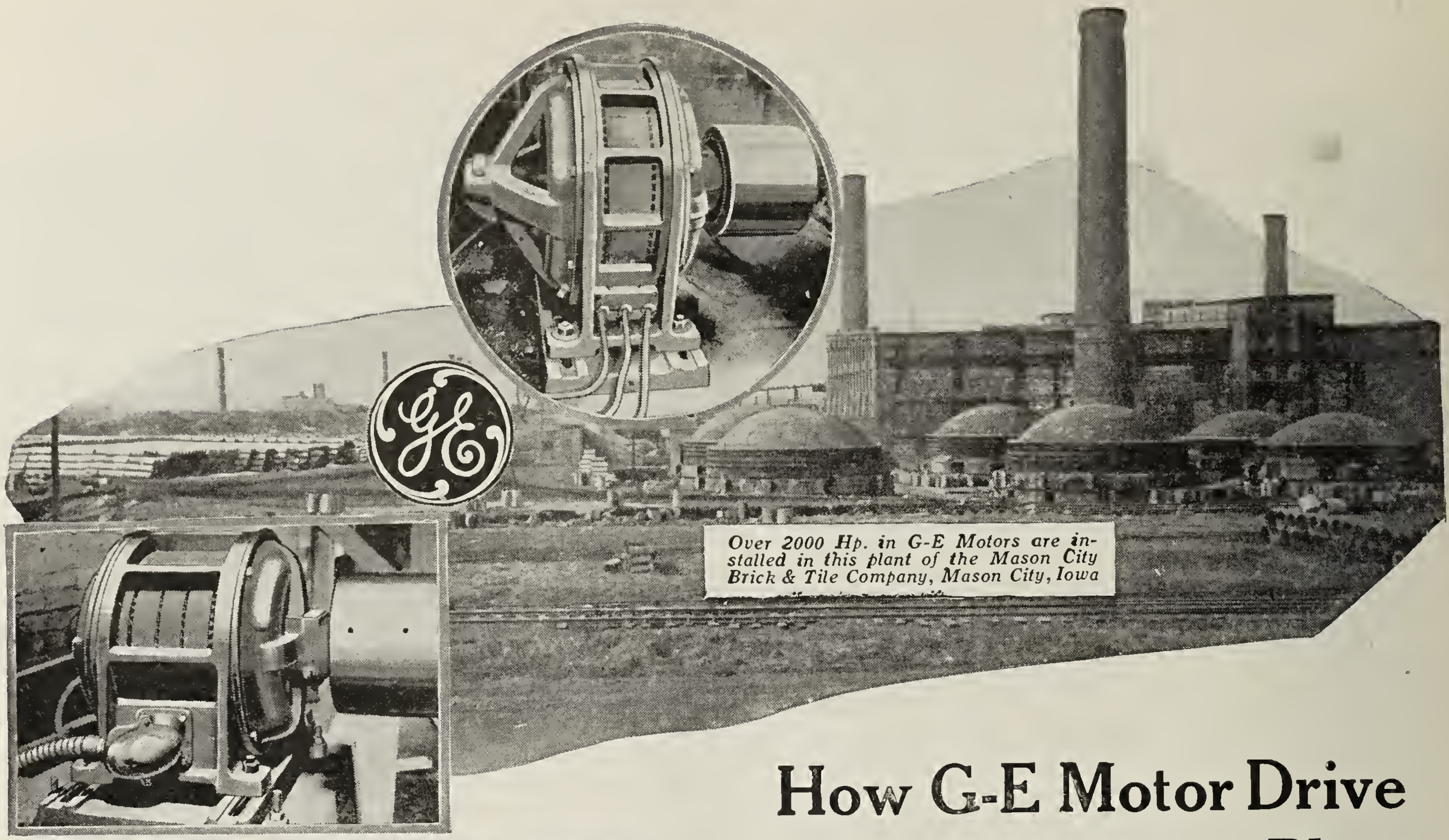
"It's the Belt with the Green Edge"

THE
GANDY BELTING COMPANY

MAIN OFFICE AND FACTORY: 732 WEST PRATT ST., BALTIMORE, MD.
NEW YORK: 36 WARREN STREET
CHICAGO: 552 W. ADAMS STREET



GANDY
STITCHED COTTON DUCK
BELT



Over 2000 Hp. in G-E Motors are installed in this plant of the Mason City Brick & Tile Company, Mason City, Iowa

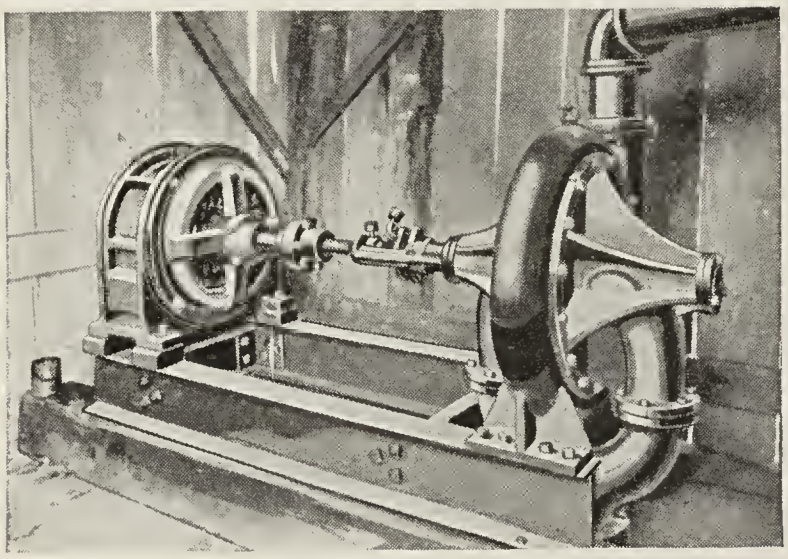
How G-E Motor Drive Improves Your Plant

Wherever G-E Motors are installed, marked advantages are gained and maintained in the performance of the machines they drive. The entire success with which leading brick plants are using G-E Motors, constitutes a potent argument for the adoption of G-E Motor drive throughout the industry.

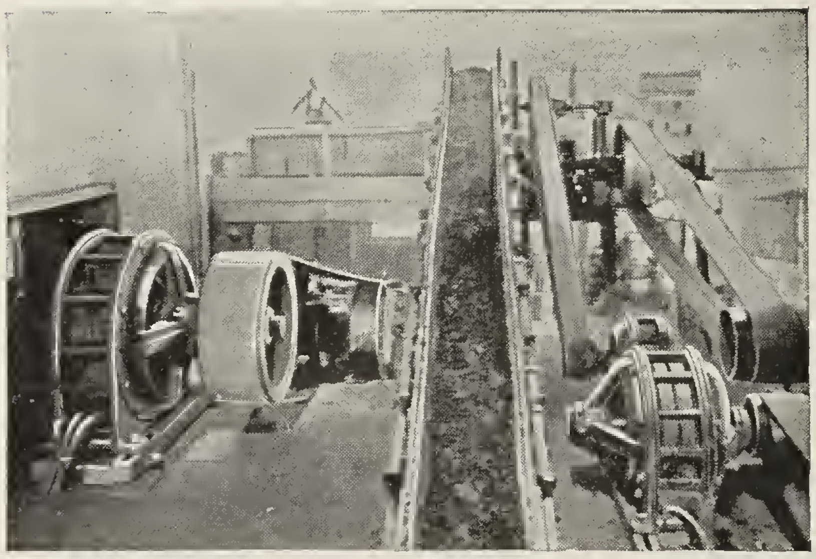
It has been proved in numerous installations, some of which are shown here, that G-E Motors and Control Devices give a greater measure of flexibility, reliability, economy, and efficiency to operating the essential machines in the Brick and Clay industry, than is now obtained by other methods.

The use of G-E Motor drive for pumps is advantageous because of the flexibility and economy of the power transmission. For driving conveyors, the G-E Squirrel Cage Induction Motor is especially adaptable because it is dependable and economical in operation.

Where G-E Motors drive machines, maximum production with minimum power consumption is obtained from each machine. There is a marked gain in efficiency and economy at every point where G-E Motors are installed—consider the gain in complete motorization of your plant.



G-E 10 Hp. Squirrel Cage Induction Motor driving a 1000 G.P.M. centrifugal pump against a 20 ft. head. Jones Brick Company, Macon, Ga.



Group of one G-E 200 Hp. Induction Motor driving Auger Brick machine, one 50 Hp. Induction Motor driving crusher rolls and one 10 Hp Induction Motor driving clay conveyor, Illinois Brick Company, Bernice, Ill.

General Electric Company
Schenectady, N. Y.
Sales Offices in all Large Cities

GENERAL ELECTRIC

43B-766

Leading Clay Journal of the World.

BRICK and CLAY RECORD

Established 1892. Now in its thirty-first year.

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

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Member of Audit Bureau of Circulations.

Subscriptions: One Year (26 Numbers), United States, $3.00; Foreign, $4.00; Single Copies, 25 Cents.

Published Every Other Tuesday by
Industrial Publications, Inc., 407 S. Dearborn St., Chicago.
Telephone Harrison 9462

NEW YORK CLEVELAND

December 25, 1923 Vol. 63, No. 13

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After Four Years—Where Are We? 914

In this article Louis Grilk brings out the relative positions of common brick, hollow tile, cement, lumber, terra cotta and all clay products with regard to face brick. Some startling facts are brought out.

Manufacturer-Dealer Contract Adopted by A. F. B. A. . . 918

How to Tie-In with Your Association Advertising 922

Another excellent advertising article by R. R. Shuman. Mr. Shuman gives a suggestion for an advertisement urging the public to "Brick-build now."

Drilling, Boring and Reaming with the Lathe 924

An article describing the kind of tools to be used in the above operations and plenty of illustrations to show how they are to be used. This article should be kept handy in the machine shop at all times.

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WE ARE just at the threshold of a new year—the time when we clean out our files and desks of much of last year's material in order to start things with clean slate in 1924. Maybe you'll wonder whether you ought to keep your file of Brick and Clay Record for 1923. We urge you most strongly to keep it. There is so much of real value in the two 1923 volumes that we feel you would be making a mistake if you did not keep them. For instance, Brick and Clay Record gave to the industry in 1923:

The complete cost system of the Barron Brick Co. of Chicago and Roanoke, Ill.

"Accounting Simplified"—a complete bookkeeping system by G. W. Greenwood, treasurer United Refractories Co., Dunbar, Pa.

An insight into the synthetic brick and tile industry.

Comprehensive discussion of dealer distribution embracing both manufacturer and dealer side—several plans now in use by various companies.

Description of John H. Gloninger's modern plant at Vanport, Pa.

Description of the highly efficient plant of Fiske & Co. at Darlington, Pa., by C. Forrest Tefft, production manager of all Fiske plants.

Description of Los Angeles Pressed Brick Co.'s three plants showing how $72,000 was lopped off the annual payroll.

Information on digging from an 80 foot bank with a shale planer.

Information on the value of clay lands.

The true story and figures of foreign brick importations.

Description of the most up-to-date plant on the Hudson River, embracing some of the very latest developments in the clay industry.

A most complete article on "Correct Methods of Farm Drainage."

Prospects in 1924 for the Hudson River—information secured by personal interviews and investigation.

The most complete series of articles ever published on the manufacture of silica brick.

Information on how to secure capital for the expansion of a clay plant or development of clay properties.

Complete information on use of mechanical stokers in open fire kiln burning.

These are, of course, just the high spots. In order to chronicle everything we would need a great deal more space.

It is the intention of Brick and Clay Record to maintain this same high standard of service during the coming year and we want our readers to expect great things from the clay industry's trade paper.

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*Stevenson Co. 899
Sturtevant Co., B. F.......937

Tate-Jones & Co...........945
Taylor Instrument Co......943
Taylor-Wharton Iron & Steel Co. 948
Thew Shovel Co............897
*Thwing Instrument Co......950
*Toronto Fdry. & M. Co.....898
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United Clay Mines Corp....955

Wellman-Seaver-Morgan Co..957
Westinghouse El. & Mfg. Co.902
*Wilson-Maeulen Co. 949

*See also our catalog information in the 1922 CLAY PRODUCTS CYCLOPEDIA.

What and Where to Buy

A classified list for the convenience of readers of machinery, equipment and supplies used in the manufacture of clay products. Index to advertisements will give you page number of any advertiser, and by referring to advertisement you can get full particulars about products and addresses. If you don't find what you want, write us and we will tell you where to get it.

Accelerators
Dry Pan Accelerator Co.

Air Receivers
Frost Manufacturing Co.

Air Cooling and Purifying
Ammeters.
Brown Instrument Co.

Anti-Friction Metals.
Toronto Fdry. & Mach. Co.

Apparatus (Heating).
American Blower Co.

Automatic Mangles
Philadelphia Drying Machinery Co.
Proctor & Schwartz, Inc.

Automatic Stokers.
Clay Service Corporation.

Automatic Stove Rooms.
Philadelphia Drying Machinery Co.
roctor & Schwartz.

Babbitt Metal.
oronto Fdry. & Mach. Co.

Barium Carbonate.
oessler Hasslacher Chem. Co.

Barrows and Trucks.
Bonnot Co.
Chambers Bros. Co.
Clark Tructractor Co.
Fate-Root Heath Co.
Freese & Co., E. M.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Lancaster Iron Works, Inc.
Potts & Co., C. & G
Robinson, Inc., F. H.
Steele & Sons, J. C.
Stevenson Co.
Toronto Fdry. & Mach. Co.

Bars, Rail Splice
L. B. Foster Co., Inc.

Barytes, Carbonate of.
Roessler Hasslacher Chem. Co.

Bearings.
Bonnot Company
Caldwell & Son Co., H. W.
Dodge Sales & Engineering Co.
International Clay Mach. Co.
Link-Belt Company.
Robinson, Inc., F. H.
Webster Mfg. Co.

Belting.
Gandy Belting Co.
Goodyear Tire & Rubber Co.
Main Belting Co.
Manheim Manufacturing and Belting Co.
New York Belting and Packing Co.
Quaker City Rubber Co.

Belting (Elevator).
New York Belting and Packing Co.

Belting, Silent Chain.
Link-Belt Company.

Belt Conveyers
Bonnot Company
Caldwell & Son Co., H. W.
Gandy Belting Co.
Goodyear Tire & Rubber Co
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Lancaster Iron Works, Inc.
Link-Belt Company.
New York Belting and Packing Co.
Potts & Co., C. & G.
Robinson, Inc., F. H.

Belt Fasteners.
Bristol Company, The.
Flexible Steel Lacing Co.

Belt Idler.
Caldwell Co., W. E.

Belt Hooks and Rivets.
Bristol Company, The.

Belt Lacing.
Bristol Company, The.

Blowers.
American Blower Co.
Clarage Fan Co.

Boilers.
(See Engines and Boilers.)
Frost Manufacturing Co.

Boiler Insulation.
Armstrong Cork & Insulation Co.
Celite Products Co.

Bolts and Nuts, Track
L. B. Foster Co., Inc.

Brick Conveyors.
Bonnot Co.
Chambers Bros. Co.
Link-Belt Company.
Mathews Gravity Carrier Co.
Potts & Co., C. & G.

Brick Handling Machinery.
Hadfield-Penfield Steel Co.
Link-Belt Company.
Mathews Gravity Carrier Co.

Brick (Insulating).
Armstrong Cork and Insulation Co.
Celite Products Co.

Brick (Ornamental).
Louisville Machine Mfg. Co.

Brick Machines.
(See "Dry Press," "Stiff-Mud" and "Soft-Mud.")

Brick Machine Parts
American Manganese Steel Co.
Hadfield-Penfield Steel Co.
Taylor-Wharton Co.

Buckets, Dredging and Excavating.
American Manganese Steel Co.
Ball Engine Co.
Bucyrus Company.
Erie Steam Shovel Co.
Hadfield-Penfield Steel Co.
Link-Belt Company.
Marion Steam Shovel Co., The.
Taylor-Wharton Co.

Buckets, Elevator.
American Manganese Steel Co.
Bonnot Company
Hendrick Manufacturing Co.
Link-Belt Company.
Mullins Body Corp.
Robinson, Inc., F. H
Stevenson Co.
Taylor-Wharton Co.
Webster Mfg. Co.

Burning System.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Smokeless Oil Burner Co.

Bushings
Caldwell Co., W. E.

Cables.
Robinson, Inc. F. H.

Cable Conveyors.
Caldwell & Son Co., H. W.
Hadfield-Penfield Steel Co.
Lancaster Iron Works, Inc.

Carbonate of Barytes.
Roessler Hasslacher Chem. Co.

Car Counter.
Robinson, Inc., F. H.

Cars.
Atlas Car & Mfg. Co.
Bonnot Company
Chase Fdry. & Mfg. Co.
Clark Tructractor Co.
Fate-Root-Heath Co.
L. B. Foster Co., Inc.
Hadfield-Penfield Steel Co.
Hendrick Manufacturing Co.
International Clay Mchy. Co.
Lancaster Iron Works, Inc.
Robinson, Inc., F. H.
Steele & Sons, J. C.

Car Movers.
Caldwell & Son Co., H. W.
Marion M., Fdry. & S. Co.

Car Unloaders
Fairfield Engineering Co
Galion Iron Wks. & Mfg. Co.
Robbins Machy. and Supply Co.
Sunbury Mfg. Co.

Castings.
Bonnot Co.
Caldwell & Son Co., H. W.
Chambers Bros. Co.
Dodge Sales & Engineering Co.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co.
Lancaster Iron Works, Inc.
Link-Belt Company.
Marion Steam Shovel Co.
Potts & Co., C. & G.
Steele & Sons, J. C.
Stevenson Co.
Toronto Fdry. & Mach. Co.

Castings (Manganese).
American Manganese Steel Co.
Hadfield-Penfield Steel Co.
Taylor-Wharton Co.

Cements (Insulating).
Celite Products Co.

Chain.
American Manganese Steel Co.
Caldwell & Son Co., H. W.
Link-Belt Company.
Taylor-Wharton Co.
Webster Mfg. Co.

Clamshells.
Link-Belt Company.

Clays
United Clay Mines.

Clay Cars (See "Cars")

Clay Conveyors.
Bonnot Company
H. Brewer & Company.
Hadfield-Penfield Steel Co.
Quaker City Rubber Co.
Robinson, Frank H.
Webster Mfg. Co.

Clay Feeders and Mixers.
Bonnot Co.
H. Brewer & Company.
Fate-Root-Heath Co.
Chambers Bros. Co.
Freese & Co., E. M
Hadfield-Penfield Steel Co.
International Clay Mchy. Co.
Lancaster Iron Works, Inc.
Marion Mach., Fdry.& Sup.Co.
Potts & Co., C. & G.
Robinson, Inc., F. H.
Schaffer Engineer. & Equip. Co.
Steele & Sons, J. C.
Stevenson Co.

Clay or Chase Mills
Stevenson Co.

Clay Gatherers.
Eagle Iron Works.

Clay Screens.
Bonnot Company
Hadfield-Penfield Steel Co.
Harrington & King Perf Co.
Hendrick Mfg. Co.
Louisville Machine Mfg. Co.
Robinson, Inc., F. H.
Stevenson Co.

Clay Unloaders.
Fairfield Engineering Co.
Robbins Machy. & Supply Co.
Sunbury Mfg. Co.

Clutches.
Bonnot Company
Caldwell & Son Co., H. W.
Caldwell Co., W. E.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co.
Lancaster Iron Works, Inc.
Link-Belt Company.
Stevenson Co.

Coal Handling Machinery
Fairfield Engineering Co.
Hendrick Manufacturing Co.
Link-Belt Company.

Coal Chutes.
Sunbury Manufacturing Co.

Coal Pulverizers.
Bonnot Co.
Webster Mfg. Co.

Coal Unloaders.
Fairfield Engineering Co.
Robbins Machy. & Supply Co..
Sunbury Mfg. Co.

Conveying Machinery.
(Also see Elevators and Conveyors).
Bonnot Company
H. Brewer & Company.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Link-Belt Company.
Mueller Machine Co., Inc.
Potts & Co., C. & G.
Stevenson Co.

Conveyors (Portable).
Hadfield-Penfield Steel Co.
Lancaster Iron Works, Inc.
Link-Belt Company.
Louisville Machine Mfg. Co.

Couplings (Shaft and Friction).
Link-Belt Company.
Nuttall Co., R. D.
Webster Mfg. Co.

Cranes
Bay City Dredge Works, Inc.

Cranes, Locomotive.
Ball Engine Co.
Bucyrus Company.
Erie Steam Shovel Co.
Link-Belt Company.
Osgood Company.
Thew Shovel Co.

Critical Point Determinations.
Brown Instrument Co.

Crushers and Pulverizers.
American Pulverizer Co.
Bonnot Co.
Chambers Bros. Co.
Fate-Root-Heath Co.
Freese & Co., E. M.
Frost Manufacturing Co.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co.
Lancaster Iron Works. Inc.
Mueller Machine Co., Inc.
Robinson, Inc., F. H.
Stevenson Co.
Toronto Fdry. & Mach. Co.
Webster Mfg. Co.

Cutters, Automatic Rotary.
Bonnot Co.
H. Brewer & Company.
Chambers Bros. Co.
Fate-Root-Heath Co.
Freese & Co., E. M.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co.
Lancaster Iron Works, Inc.
Marion M., Fdry. & S. Co.
Robinson, Inc., F. H.
Steele & Sons, J. C.
Stevenson Co.

Cutting Tables.
Bonnot Company
H. Brewer & Company.
Hadfield-Penfield Steel Co.
Louisville Machine Mfg. Co.

Cutting Wires.
Bonnot Company
H. Brewer & Company.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Robinson, Inc., F. H.

Dies.
Baird, Andrew
Bonnot Co.
H. Brewer & Company
Chambers Bros. Co.
Fate-Root-Heath Co.
Freese & Co., E. M.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co.
Lancaster Iron Works, Inc.
Lincoln Machine Co.
Louisville Machine Mfg. Co.
Mueller Machine Co., Inc.
Robinson, Inc., F. H.
Steele & Sons, J. C.
Stevenson Co.
Toronto Fdry. & Mach. Co.

Dipper.
Bay City Dredge Works.
Bucyrus Company.

Dipper (Manganese Steel)
Hadfield-Penfield Steel Co.

Digging Machinery.
Ball Engine Co.
Bay City Dredge Works.
Bucyrus Company.
Erie Steam Shovel Co.
Hadfield-Penfield Steel Co.
Koehring Co.
Link-Belt Company.
Marion Steam Shovel Co.
Osgood Company
Thew Shovel Co.

Disintegrators.
Bonnot Co.
H. Brewer & Company
Chambers Bros. Co.
Fate-Root-Heath Co.
Freese & Co., E. M.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co
Lancaster Iron Works, Inc.
Marion M., Fdry. & Sup. Co.
Mueller Machine Co., Inc.
Potts & Co., C. & G.
Robinson, Inc., F. H.
Steele & Sons, J. C.

Ditching Machines.
Ball Engine Co.
Bay City Dredge Works.
Bucyrus Company.
Erie Steam Shovel Co.
Osgood Company.
Thew Shovel Co.

Draft Gauges.
Bristol Co.
Brown Instrument Co.
Robinson, Inc., F. H.

Draft Regulators.
Brown Instrument Co.

Dredges.
Bay City Dredge Works.
Bucyrus Company.
Osgood Company.

Drives (Silent Chain).
Link-Belt Company.

Drums
Hyman-Michaels Co.

Dryers.
American Blower Co
Bonnot Co.
Ceramic Engineering Co.
Fate-Root-Heath Co.
Hadfield-Penfield Steel Co.
International Clay Machy. Co
Lancaster Iron Works, Inc.
Minter System.
Philadelphia Drying Machinery Co.
Proctor & Schwartz, Inc.
Robinson, Inc., F. H.
Rodgers Eng. Co. L. E.
Steele & Sons, J. C.
Sturtevant Co., B. F.

Dryers (Sand).
Bonnot Co.
Fate-Root-Heath Co.
Hadfield-Penfield Steel Co.
Lancaster Iron Works, Inc.
Stevenson Co.

Dryers (Tunnel Truck)
Philadelphia Drying Machinery Co.
Proctor & Schwartz, Inc.

Dry Pan Accelerators
Dry Pan Accelerator Co.

Dry Pans.
Bonnot Co.
H. Brewer & Company
Chambers Bros. Co.
Eagle Iron Works.
Fate-Root-Heath Co.
Freese & Co., E. M.
Frost Manufacturing Co.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co
Lancaster Iron Works, Inc.
Mueller Machine Co., Inc.
Robinson, Inc., F. H.
Stevenson Company.
Toronto Fdry. & Mach. Co.

Dry Press Brick Machines.
Chisholm, Boyd & White Co
Fernholtz Brick Mach Co.
Hadfield-Penfield Steel Co.
International Clay Mach. Co
Robinson, Inc., F. H.

Dynamos and Generators
Burke Electric Co.
General Electric Co.
Westinghouse El. & Mfg. Co.

Electric Furnaces.
Brown Instrument Co
Engelhard, Chas., Inc.

Electric Cranes
(See Cranes, Locomotive)

Electric Lamp Guards
Flexible Steel Lacing Co.

Elevating Trucks.
Baker, R. & L., Co.

Elevator Boots.
Bonnot Company
Caldwell Co., W. E.

Elevator and Conveyors.
Bonnot Co.
Caldwell & Son Co., H. W.
Chambers Bros. Co.
Fate-Root-Heath Co.
Freeee & Co., E. M.
Gandy Belting Co.
Goodyear Tire & Rubber Co.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co.
Lancaster Iron Works, Inc.
Lincoln Machine Co.
Link-Belt Company.
Louisville Machine Mfg. Co.
Main Belting Co.
Mathews Gravity Carrier Co.
Quaker City Rubber Co.
Robinson, Inc., F. H.
Steveneon Co.
Toronto Fdry. & Mach. Co.
Webeter Mfg. Co.

Engineers.
Ceramic Engineering Co.
Robertson-Pease Co.
Rodgers Eng. Co. L. E.
Schaffer Engineering & Equip ment Co., The.

Engines and Boilers.
American Blower Co.
Freese & Co., E. M.
Frost Manufacturing Co.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Ironton Engine Co.
Robinson, Inc., F. H.

Engines (Oil).
Hadfield-Penfield Steel Co.

Excavating Machinery.
Bay City Dredge Works.
Bucyrue Company.
Erie Steam Shovel Co.
Link-Belt Company.
Northwest Engineering Co.
Osgood Company.
Thew Shovel Co.

Excavators, Ditch and Trench.
Bay City Dredge Works.
Bucyrus Company.
Erie Steam Shovel Co.
Thew Shovel Co.

Excavators, Dragline.
Bay City Dredge Works, Inc.
Bucyrus Company.
Erie Steam Shovel Co.
Koehring Co.
Link-Belt Company.
Steele & Sons, J. C.
Thew Shovel Co.

Exhausters.
American Blower Co.
Bonnot Company
Clarage Fan Co

Explosives.
Atlas Powder Co.

Fans.
American Blower Co.
Bonnot Co.
Clarage Fan Co.
Freeee & Co., E. M.
Hadfield-Penfield Steel Co.
Philadelphia Drying Machinery Co.
Robinson, Inc., F. H.
Rodgers Eng. Co. L. E.
Sturtevant Co., B. F.

Feed Water Heaters.
Canton Grate Co.
Freese & Co., E. M.
Froet Manufacturing Co.

Filter Presses.
Bonnot Co.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Mueller Machine Co., Inc.

Fire Insurance
Squire Co., Inc.

Flower Pot Machinery.
Baird, Andrew
Mueller Mechine Co., Inc.

Flue Cleaners.
Marion Mach., Fdy. & Sup. Co.

Fireproofing.
Louisville Machine Mfg. Co.

Friction Clutches.
Bonnot Company
H. Brewer & Company.
Caldwell Co., W. E.
Dodge Sales & Eng. Co.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Link-Belt Company.
Steveneon Co.
Webster Mfg. Co.

Frogs, Railway
L. B. Foeter Co., Inc.

Frogs and Switches.
International Clay Mach. Co.
Robineon, Inc., F. H.
Toronto Fdry. & Mach.

Furnace Insulation.
Armstrong Cork & Insulation Co.
Celite Products Co.

Gas Burners
Tate-Jones & Co. Inc.

Gas Producers.
Ceramic Engineering Co.
Wellman-Seaver Morgan Co.

Gasoline Lift Trucks
Clark Tructractor Co.

Gauges (Vacuum, Pressure and U).
Bristol Company, The.
Brown Instrument Co.

Gears.
Bonnot Company
American Manganese Steel Co.
Caldwell Co., W. E.
Caldwell & Son Co., H. W.
Dodge Sales & Eng. Co.
Hadfield-Penfield Steel Co.
Link-Belt Company.
Nuttall Co., R. D.
Taylor-Wharton Co.
Webster Mfg. Co.

Gloves.
Des Moines Glove & Mfg. Co.

Granulators.
Bonnot Co.
H. Brewer & Company.
Chambers Bros. Co.
Fate-Root-Heath Co.
Freeee & Co., E. M.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co.
Lancaeter Iron Works, Inc.
Steele & Sons, J. C.
Toronto Fdry. & Mach. Co.

Grates and Grate Bars.
Canton Grate Co.
Frost Manufacturing Co.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co.
Lancaeter Iron Works, Inc.
Marion Mach., Fdry. & S. Co.
Robinson, Inc., F. H.
Toronto Fdry. & Mach. Co.

Gravity Carriers.
Mathews Gravity Carrier Co.

Grinding Plates (Dry and Wet Pan)
American Manganese Steel Co.
Hadfield-Penfield Steel Co.
Steveneon Co.
Taylor-Wharton Co.

Heat Insulation.
Armstrong Cork & Insulation Co.
Celite Products Co.

Heat Treating Furnaces.
Brown Instrument Co.

Hoists.
Bonnot Co.
H. Brewer & Company.
Chambers Bros. Co.
Fate-Root-Heath Co.
Hadfield-Penfield Steel Co.
Hyman-Michaels Co.
International Clay Mchy. Co.
Lancaeter Iron Works, Inc.
Link-Belt Company.
Louisville Machine Mfg. Co.

Hose.
New York Belting and Packing Co.
Quaker City Rubber Co.

Hydrometers or Moisture Indicators.
Lancaeter Iron Works, Inc.

Instruments, Scientific.
Brown Instrument Co

Insulator Machinery
Baird, Andrew

Insulating Materials (Heat).
Armstrong Cork & Insulation Co.
Celite Products Co.

Insurance
Squire Co., Inc.

Kilns.
American Dressler Tunne Kilns, Inc.
Ceramic Engineering Co.
Chambers Bros. Co.
Fate-Root-Heath Co.
Hadfield-Penfield Steel Co.
International Clay Machy. Co.
Rodgers Eng. Co. L E.
Minter System.
Russell Engineering Co.
Schaffer Eng. & Equip. Co.

Kiln Accessories.
Caldwell Co., Inc., W. E.
Fate-Root-Heath Co.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co.
Lancaeter Iron Works, Inc.
Robineon, Inc., F. H.

Kiln Insulation.
Armstrong Cork & Insulation Co.
Celite Products Co.

Knives (Pug Mill)
American Manganese Steel Co.
Bonnot Company
H. Brewer & Company.
Hadfield-Penfield Steel Co.
Nuttall Co., R. D.
Taylor-Wharton Co.

Lamp Guards (Portable)
Flexible Steel Lacing Co.

Lift Trucks (Industrial)
Baker R. & L. Co.
Clark Tructractor Co.

Loaders (Wagon and Truck).
Link-Belt Company.
Sunbury Mfg. Co.

Locomotives.
Atlas Car & Mfg. Co.
Brookville Truck & Tractor Co.
Davenport Locomotive Works.
Fate-Root-Heath Co.
General Electric Co.
Hadfield-Penfield Steel Co.
Industrial Equipment Co.
Ironton Engine Co.

Locomotive Cranes.
Ball Engine Co.
Bucyrue Company.
Erie Steam Shovel Co.
Link-Belt Company.
Osgood Company.

Manganese.
Hy-Grade Manganese Co.
Lavino & Co.
National Paint and Manganese Co.
Roeseler & Hasslacher Chemical Co.

Manganese Steel Castings
American Manganese Steel Co.
Hadfield-Penfield Steel Co.
Taylor-Wharton Co.

Mangles.
Philadelphia Drying Machy. Co.
Proctor & Schwartz.

Mechanical Draft Apparatus
American Blower Co.

Meters.
Brown Instrument Co.

Molds.
Bonnot Co.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Lancaeter Iron Works, Inc.
Robinson, Inc., F. H

Mold Sanders.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co
Lancaster Iron Works, Inc.
Potts & Co., C. & G.

Motors—Electric.
Burke Electric Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Muller Tires (Dry and Wet Pan)
American Manganese Steel Co.
H. Brewer & Company.
Hadfield-Penfield Steel Co.
Steveneon Co.
Taylor-Wharton Co.

Oil Burners.
Best Co., W. N.
Schure Oil Burner Co.
Smokeless Oil Burner Co.
Tate-Jonee Co.

Oil Burning Systems.
Best Co., W. N.
Schure Oil Burner Co.
Smokeless Oil Burner Co.
Tate-Jonee Co.

Optical Pyrometers.
Brown Instrument Co.
Taylor Inst. Cos.

Packings and Mechanical Rubber Goods.
New York Belting and Packing Co.
Quaker City Rubber Co.

Paints (Mineral).
Hy-Grade Manganese Co.

Pallets and Trays.
Hadfield-Penfield Steel Co.
Lancaeter Iron Works, Inc.
Ohio Galvanizing & Mfg. Co.
Robinson, Inc., F. H.

Pans (Combination Tempering).
Steveneon Co.

Pans, Dry Pans, Wet Pans, Clay or Chaser Mills Combination Tempering Pans.
Bonnot Co.
H. Brewer & Company.
Chambers Bros. Co.
Eagle Iron Works.
Fate-Root-Heath Co.
Freeee & Co., E. M.
Froet Manufacturing Co.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Lancaeter Iron Works, Inc.
Mueller Machine Co., Inc.
Robinson, Inc., F. H.
Toronto Fdry. & Mach. Co.
Steveneon Compnay.

Perforated Sheet Metal.
Harrington & King Perforating Co.
Hendrick Mfg. Co.
Robinson, Inc., F. H.
Steveneon Co.

Pinions
American Manganese Steel Co
Hadfield-Penfield Steel Co.
Taylor-Wharton Co.

Pipes
Crane Co.

Pipe, New and Second Hand
L. B. Foeter Co., Inc.

Poidometer.
Schaffer Eng. & Equip. Co.

Portable Track.
International Clay Mach. Co.
Robinson, Inc., F. H.

Potentiometers.
Brown Instrument Co.

Potters' Machinery.
Bonnot Co.
Fate-Root-Heath Co.
International Clay Mach. Co.
Mueller Machine Co., Inc.

Power Plant Equipment (Complete).
Bonnot Co.
Burke Electric Co.
Dodge Sales & Engineering Co.
Froet Manufacturing Co.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Link-Belt Company
Webeter Mfg. Co.
Westinghouse El. & Mfg. Co.

Power Shovels
(See Shovels, Power)

Power Transmission.
Caldwell Co., W. E.
Caldwell & Son, H. W.
Dodge Sales & Eng. Co.
Link-Belt Company.

Producer Gas
Wellman-Seaver Morgan Co.

Pug Mills.
Baird, Andrew
Bonnot Co.
H. Brewer & Company.
Chambers Bros. Co.
Fate-Root-Heath Co.
Freeee & Co., E. M.
Hadfield-Penfield Steel Co.
International Clay Mchy. Co
Lancaster Iron Works, Inc.
Mueller Machine Co., Inc.
Potts & Co., C. & G.
Robinson, Inc., F. H.
Steele & Sons, J. C.
Steveneon Co.
Toronto Fdry. & Mach. Co.

Pulleys, Cast Iron.
Bonnot Company
Caldwell Co., W. E.
Caldwell & Son Co., H. W.
Dodge Sales & Eng. Co.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Webeter Mfg. Co.

Pulverizers.
American Pulverizer Co.
Bonnot Company
Hadfield-Penfield Steel Co.
Mueller Machine Co., Inc.
Robineon, Inc., F. H.
Stevenson Co.
Toronto Fdry. & Mach. Co.

Pump, Dredging and Sand. Pumps (Centrifugal
American Manganese Steel Co.
Bucyrus Company.
Smokeless Oil Burner Co.
Taylor-Wharton Co.

Pumps, Vacuum.
(See Vacuum Pumps.)

Pyrometers.
Bristol Co.
Brown Instrument Co.
Engelhard, Chas.
Frink Pyrometer Co.
Taylor Inst. Cos.
Thwing Instrument Co.
Wilson Maeulen Co.

Railroad Ditchers.
Bucyrus Company.
Erie Steam Shovel Co.
Oegood Company.

Rails (Frogs and Switches).
L. B. Foster Co., Inc.
Hyman-Michaels Co.
International Clay Mach. Co.
Robineon, Inc., F. H.

Rails, Relaying
L. B. Foster Co., Inc.

Railway Equipment and Supplies
L. B. Foeter Co., Inc.

Rattler.
Freese & Co., E. M.
Hadfield-Penfield Steel Co.
Robinson, Inc., F. H.

Recorders (Co.[2])
Engelhard, Inc. Chas.

Recording Pressure Gages.
Bristol Company, The.
Brown Instrument Co.

Regulators.
Bristol Company, The.
Brown Instrument Co.

Represses.
Bonnot Co.
Chambers Bros. Co.
Freeee & Co., E. M.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.
Lancaster Iron Works, Inc.
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Revolving Screens.
Bonnot Company
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International Clay Mach. Co.
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Roofing Tile Machinery.
Bonnot Co.
Fate-Root-Heath Co.
Freeee & Co., E. M.
Hadfield-Penfield Steel Co.
International Clay Mach. Co.

Rope Drives.
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Link-Belt Company.

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Rotary Dryers.
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Sagger Machinery
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Sand-Lime Brick Machinery.
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Steveneon Co.

Sand Mills.
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Scrapers, Plows and Clay Gatherers.Co.
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Fernholtz Brick Mach. Co.
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Screens (Clay and Cement).
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Link-Belt Company.
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Screen Plates.
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Louisville Machine Mfg. Co.

Screen Plates (Dry and Wet Pan)
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Screens (Perforated Metal)
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Erie Steam Shovel Co.
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Northwest Engineering Co.
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Soft Mud Brick Machines.
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Steel Plate Construction.
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Main Belting Co.
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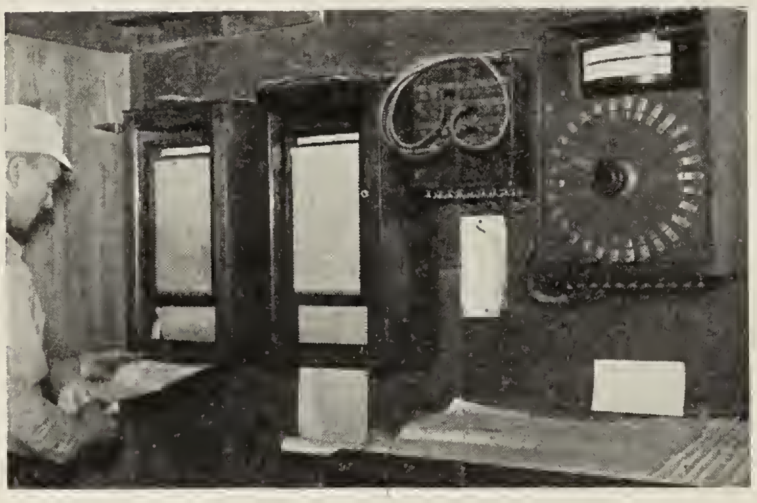
Some of the oil-fired kilns at the Los Angeles Pressed Brick Company's Plant

Fortunate is the Convention-goer who inspects the Los Angeles Pressed Brick Company's Plants

The Convention offers a no more valuable opportunity than to obtain permission to visit and study these model plants at close range. No men in the industry have been more successful in adapting scientific apparatus and "efficiency equipment" than have President Norman Frost and his associates. None have more generously shared the results of their experiences with the industry at large. (See 12 Page Supplement of Brick and Clay Record of May 29, 1923.)



One of the Brown Pyrometer Installations at the Los Angeles Pressed Brick Company

The Los Angeles Pressed Brick Company's plants use Brown Pyrometers—both Indicating and Recording. The latest installation was on their new Harrop Continuous Kiln, completed this fall. Ask them about Brown Pyrometers.

For complete information on the savings Browns are making in the Ceramic field, write today to The Brown Instrument Company, 4503 Wayne Ave., Philadelphia, Pa., or one of our district offices in New York, Boston, Pittsburgh, Cleveland, Columbus, Detroit, Chicago, Indianapolis, St. Louis, Birmingham, Denver, Los Angeles, San Francisco, Montreal.

See Our Catalog in the Clay Products Cyclopedia

Brown Pyrometers

Most used in the world

Trade Names Now in Use

on Face Brick and Other Clay Products

The purpose of this directory is two-fold: it serves to prevent a manufacturer from adopting a trade-name that is already in use—and it also helps manufacturers who use it to establish priority of claim to a name.

A-B-C—Advance Brick Co., Omaha, Nebr.
ALLIANCE RUFFS—Alliance (O.) Brick Co.
ALUMINITE—The Lock Haven Fire Brick Company, Lock Haven, Pa.
ALUMINITE—The Stowe-Fuller Co., Cleveland, Ohio.
ALUMITE—The Massillon (Ohio) Refractories Co.
ANNESS HOLLOW TILE—Anness & Potter Fire Clay Co., Woodbridge, N. J.
APEX—Tri-City Brick Company, Rock Island Ill.
ARCADIAN—Poston Paving Brick Company, Crawfordsville, Ind.
ARKATEX—Southern Building Products Co., Little Rock, Ark.
ARMOR—Greenpoint Fire Brick Co., Brooklyn, N. Y.
ARMURE—Tri-City Brick Company, Rock Island, Ill.
ARTBRIQUE—Yingling-Martin Brick Co., Johnsonburg, Pa.
ATHENA—Hocking Valley Fire Clay Co., Nelsonville, Ohio.
AUTO BRIK—Lancaster Iron Works, Inc., Lancaster, Pa.

BABYLONIAN—The Standard Brick Company, Crawfordsville, Ind.
BEAVERCLAY—Beaver Clay Mfg. Co., New Galilee, Pa.
BISHOP COLONIAL—Southern Brick and Tile Company, Louisville, Ky.
BRADFORD HOLLOW BUILDING TILE—Bradford Brick & Tile Co., Bradford, Pa.
BRADFORD REDS—Bradford Brick & Tile Co., Bradford, Pa
BRADFORD RUFFS—Bradford Brick & Tile Co., Bradford, Pa.
BUFFTEX—Sheffield (Ia.) Brick & Tile Co.
BURLAP—Key-James Brick Co., P. O. Alton Park, Tenn.
BURMAH—Walkers Mill Stone and Brick Co., Pittsburgh, Pa.

CALEDONIAN—Fiske & Co., Inc., Boston, New York and Watsontown, Pa.
CHENILLE-TEX—Martinsville Brick Co., Martinsville, Ind.
CASTLE-TEX—New Castle Mining and Clay Products Co., New Castle, Pa.
CLAYCRAFT ROUGH BUFFS AND GRAYS—The Claycraft Mining and Brick Co., Columbus, Ohio.
CLAYCRAFT SMOOTH BUFFS AND GRAYS—The Claycraft Mining and Brick Co., Columbus, Ohio.
CLAYCRAFT VELOURS—The Claycraft Mining and Brick Co., Columbus, Ohio.
CLAYTEX ROUGH REDS AND BUFFS—Walton N. Cable, New York City.
CLOISTER—Western Brick Co., Danville, Ill.
COLONIAL—Capital Clay Co., Des Moines, Iowo.
CONCO CLAY PRODUCTS—H. D. Conkey & Co., Mendota, Ill.
CORALTONE—Harris Brick Co., Zanesville, O.
CORALROSE—Harris Brick Co., Zanesville, O.
COR-TEX—The New Corunna Brick Co., Corunna, Mich.
COLUMBIA—Columbia Clay Co., Columbia, S C.
COMMUNITIES—Danville Brick Co., Manufacturers—H. D. Conkey & Co., Mendota, Ill., General Sales Agents.
CORDOVA (Roofing Tile)—Gladding, McBean & Co., San Francisco and Lincoln, Cal
CORSWEVE—Thomas Moulding Brick Co., Chicago, Ill
CROTON-REDS—New Castle Mining and Clay Products Co., New Castle, Pa.
CROWN—Green Fire Brick Co., A. P., Mexico Mo.

DENISON—Mason City (Ia.) Brick & Tile Co.
DE LUXE—The Standard Brick Company, Crawfordsville, Ind.
DIAMOND—Missouri Fire Brick Co., St. Louis, Mo
DORIC—Western Brick Co., Danville, Ill
DUNBAR—United Refractories Co., Uniontown, Pa.

EGYPTIAN PAVING BLOCK—Murphysboro (Ill.) Paving Brick Co.
E. F. B. Co.—Elk Fire Brick Co., St. Marys, Pa.
ELKCO—Elk Fire Brick Co., St. Marys, Pa.
ELKCO SPECIAL—Elk Fire Brick Co., St. Marys, Pa.
ELK STEEL—Elk Fire Brick Co., St. Marys, Pa.
EMBOSTEX—Streator (Ill.) Brick Co.
EMPIRE—Green Fire Brick Co., A. P., Mexico, Mo.
EMPIRE—The Minor Fire Brick Company, Empire, Ohio.
EMPIRE—Western Brick Co., Danville, Ill.
EVERHARD ANTIQUE—Everhard Co., Massillon, O.
EVERHARD CORINTHIANS—Everhard Co., Massillon, Ohio.
EVERHARD DOUBLE-TEXTURE—Everhard Co., Massillon, Ohio.
EVERHARD FERN-LEAF—Everhard Co., Massillon, Ohio.
EVERLASTING—Mason City (Ia.) Brick & Tile Co.

FALLSTON IRON SPOTS—Fallston Fire Clay Co., Pittsburgh, Pa.
FALLTEX Fallston Fire Clay Co., Pittsburgh, Pa.
FISKLOCK—Fiske & Co., Inc., Boston, New York and Watsontown, Pa.
FRASERCLAY—Fraser Brick Co., Dallas Texas.
F. R. C. CHROME—Federal Refractories Company, Alexandria, Pa.
F. R. C. MAGNESITE—Federal Refractories Company, Alexandria, Pa.
F. R. C. SILICA—Federal Refractories Company, Alexandria, Pa.
FUL-TONE—Fultonham-Texture Brick Co., East Fultonham, Ohio.
FULTONHAM-BLEND — Fultonham-Texture Brick Co., East Fultonham, Ohio.

GLASGO—Glasgow Clay Products Co., Glasgow, Va.
GLONINGER IRON SPOTS—Gloninger & Co., Pittsburgh, Pa.
GOLDEN GLOW—Thos. Moulding Brick Co., Chicago, Ill.
GOTHIC—Western Brick Co., Danville, Ill.
GREENDALES—Hocking Valley Pro. Co., Columbus, O.
GREENDALE RED RUGS—Hocking Valley Pro. Co., Columbus, O.
GREENDALE RUGS—Hocking Valley Pro. Co., Columbus, O.
GRID—Fiske & Co., Inc., Boston and New York.

HAWK-I-TEX—Capital Clay Co., Des Moines, Iowa.
HEATHER-TEX—New Castle Mining and Clay Products Co., New Castle, Pa.
HOCKING BLOCK—Hocking Valley Brick Co., Columbus, O.
HOLLAND SPLIT—Thomas Moulding Brick Co., Chicago, Ill.
HOMESPUN—Thomas Moulding Brick Co., Chicago, Ill.
HY-TEX—Hydraulic-Press Brick Co., St. Louis, Mo.

INTERLOCKING TILE—Fraser Brick Co., Dallas, Texas.
IRONCLAY—Iron Clay Brick Co., Columbus, Ohio.
IRONSTONE—Salt Lake Pressed Brick Co., Salt Lake City, Utah.

KELSO—Hayes Run Fire Brick Co., Orviston, Pa.
KEYSTONE—Elk Fire Brick Co., St. Marys, Pa.

LADLE—The Zoar Fire Clay Company, Zoar, O
LAKE SHORE MINGLED SHADES—The Burton-Townsend Co., Zanesville, O.
LAKE SHORE BLOCK—The Burton-Townsend Co., Zanesville, Ohio.
L. H. STEEL—The Lock Haven Fire Brick Company, Lock Haven, Pa.
LO-TEX BRICK—The Longmont (Colo.) Brick & Tile Co.
LO-TEX TILE—The Longmont (Colo.) Brick & Tile Co.
LOZENGE—Tri-City Brick Company, Rock Island, Ill.

MARCEL—Tri-City Brick Company, Rock Island, Ill.
M. D. ELK—Elk Fire Brick Co., St. Marys, Pa.
MEDAL BLOCK—Meda Paving Brick Co., Cleveland, Ohio.
METALEX—Columbia Clay Co., Columbia, S. C.
MEXICO, MO.—Green Fire Brick Co., A. P. Mexico, Mo.
MIDCO—Mid-Continent Clay Co., Peru, Kansas.
MINOR—The Minor Fire Brick Company, Empire, Ohio.
MITCHELL EXTRA—Mitchell Clay Mfg. Co., St. Louis, Mo.
MITCHELL SUPERIOR—Mitchell Clay Mfg. Co., St. Louis, Mo.
MITCHELL NO. 1—Mitchell Clay Mfg. Co., St. Louis, Mo.
MITCHELL DIASPORE—Mitchell Clay Mfg. Co., St. Louis, Mo.
MOBRIQUE—Harris Brick Co., Zanesville, O.
MOSAIC—Western Brick Co., Danville, Ill.

NATIONAL—The National Fire Brick Company, Strasburg, Ohio.
NO. 1.—J. H. Gautier & Co., Jersey City, N. J.
NONPAREIL—Armstrong Cork & Insulation Co. Pittsburgh, Pa.
NORTRUF—Tri-City Brick Company, Rock Island, Ill
NUMATZ—Tri-City Brick Company, Rock Island, Ill.
NUVOGUE—Boone (Ia.) Brick, Tile & Pav. Co.,
OIL—J. H. Gautier & Co., Jersey City, N. J.
OLD HOMESTEAD—Burton-Townsend Co., Zanesville, Ohio.
OLD ROSE MISSION—The Briggs Company, Lansing, Mich.
OLEAN BLOCK—Sterling Brick Co., Olean N.Y.
ORIENTAL—Poston Paving Brick Co., Crawfordsville, Ind.
ORIENTAL RUFF—Poston-Herron Brick Co., Attica, Ind.
OXFORD—Southern Brick and Tile Company, Louisville, Ky.

PASTELS—The Standard Brick Co. Crawfordsville, Indiana.
PATRICIANS—Danville Brick Co., Manufacturers—H. D. Conkey & Co., Mendota, Ill., General Sales Agents.
PENN.—The Lock Haven Fire Brick Company, Lock Haven, Pa.
PERFEKT—Tri-City Brick Company, Rock Island, Ill.
PERSIAN SPLIT—Thomas Moulding Brick Co., Chicago, Ill.
POS-TEX—Poston Brick Co., Springfield, Ill.
POSTON-ORIENTAL—Poston-Herron Brick Co., Attica, Ind.
POSTONIAN—Poston-Herron Brick Co., Attica, Ind.
"POTTRY"—B. Mifflin Hood Brick Co., Atlanta, Ga.
PROMENADE—Yingling-Martin Brick Co., Johnsonburg, Pa.

RAGTEX—Alphons Custodis Chimney Construction Co., New York City.
RAINBOW—Burton Townsend Co., The, Zanesville, Ohio.
RED ROCK RUFFS—Auburn Shale Brick Co., Auburn, Pa.
ROCKTEX—Rockford (Iowa) Brick and Tile Co.
ROTEX—Elk Fire Brick Co., St. Marys, Pa. Gettysburg, Pa.
ROYAL HA-SIERS—Decatur Brick Mfg. Co. Decatur, Ill.
RUBYTEX—Columbia Clay Co., Columbia. S.C.
RUFTEX—Thomas Moulding Brick Co., Chicago.
RUG—Hocking Valley Pro. Co., Columbus, O.
RUSTIC—Mid-Continent Clay Co., Peru, Kansas.
RUSTIQUE ORIENTAL—Martinsville (Ind.) Bk. Co.

ST. MARYS—Elk Fire Brick Co., St. Marys Pa
SHALE-TEX—Streator (Ill.) Brick Co.
SILLIMANITE — The Massillon (Ohio) Refractories Co.
SIL-O-CEL—Celite Products Co., Chicago, Ill
S. M.—Savage Mountain Fire Brick Co., Frostburg, Md.
SPECIAL—Green Fire Brick Co., A. P., Mexico, Mo.
STANDARD—Green Fire Brick Co., A. P., Mexico, Mo.
STANDARD—The National Fire Brick Company, Strasburg, Ohio.
STEEL CLAY—Thos. Moulding Brick Co., Chicago, Ill.

TAPESTRY—Fiske & Co. Inc., Boston, New York and Watsontown, Pa.
TAVERN BRICK—Metropolitan Pav. Brick Co., Canton, O.
TEXTUR—Thomas Moulding Brick Co., Chicago, Ill.
THERMO—The Crush Brick Co., Sulphur Springs Texas.
TIFFANY—Thomas Moulding Brick Co., Chicago, Ill.
TINTARA—McKay Brick Co., Wickliffe, Ohio.
TORONTO—Toronto Fire Clay Co., Toronto O
TORONTO VINE RUFFS—The Toronto (Ohio Fire Clay Co.
TOWNSEND BLOCK—The Burton-Townsend Co., Zanesville, Ohio.
TURKESTAN—Beaver Clay Mfg. Co., New Galilee, Pa.
TURKO—Rochester (Pa.) Clay Products Co
TUT-TEX—MATTS — Birmingham (Ala.) Clay Products Co.
TUXEDOS—Danville Brick Co., Manufacturers—H. D. Conkey & Co., Mendota, Ill. General Sales Agents.

UNITED—United Refractories Co., Uniontown Pa.
U. R. Co.—United Refractories Co., Uniontown, Pa.
U-TEX—Fultonham-Texture Brick Co., East Fultonham, Ohio.

VINETEX—The Toronto (Ohio) Fire Clay Co.
VERTEX—Beaver Clay Mfg. Co., New Galilee Pa.
VOLCANIC—Beaver Clay Mfg Co., New Galilee, Pa.

WATERPROOF—Gloninger & Co., Pittsburgh, Pa.
WIRE-CUT-LUG BRICK—Dunn Wire-Cut Lug Brick Co., Conneaut. Ohio.

YALE-TEX—Gloninger & Co., Pittsburgh, Pa.

ZOAR—The Zoar Fire Clay Company, Zoar, Ohio

ENGINEERING SERVICE

FOR THE ADVANCEMENT OF THE CLAY INDUSTRIES

Less Labor ∵ Less Fuel ∵ Larger Output

Better Quality

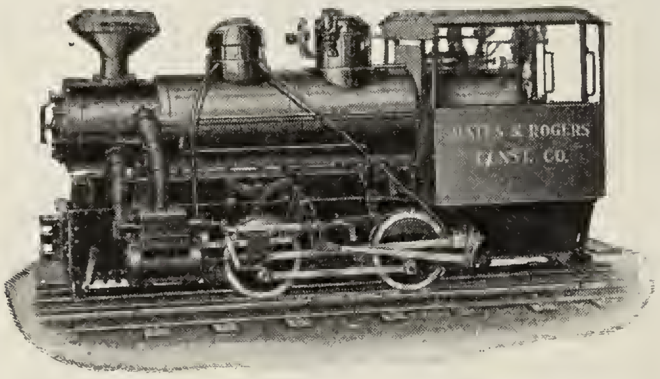
Investigation of Manufacturing Propositions
Examination of Properties and Tests of Clays

Plans and Specifications of Factories, Dryers and Kilns—Correction of Defective Products and Uneconomical Operations

Superior Continuous Kilns A Specialty — *Further information and bulletins upon request*

THE CERAMIC ENGINEERING COMPANY

Schultz Building
W. D. RICHARDSON, President
COLUMBUS, OHIO



POWERFUL—SPEEDY
4 AND 6 WHEEL TYPES
ANY GAUGE

Pulls Heavier Trains on Level Track or Steep Grades

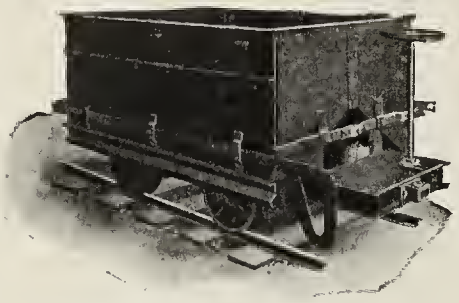
The Davenport Gear Drive Locomotives

will handle your work most successfully

Builders of
ROD AND GEAR DRIVE LOCOMOTIVES

DAVENPORT LOCOMOTIVE WORKS
DAVENPORT, IOWA

ATLAS COST REDUCING EQUIPMENT



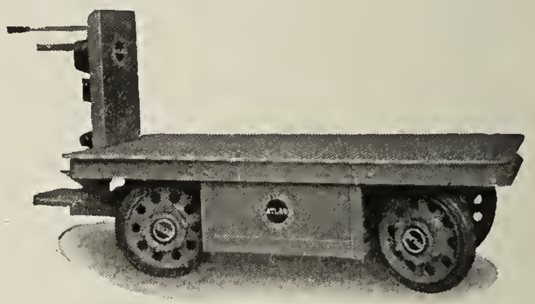
Gable Bottom Dump Car, with trip and brake

Electric Transfer Cars
Rocker Dump and Gable Bottom Cars
Storage Battery Locomotives

Electric Trucks and Tractors

Tunnel Kiln Cars

Let us solve your haulage problems.

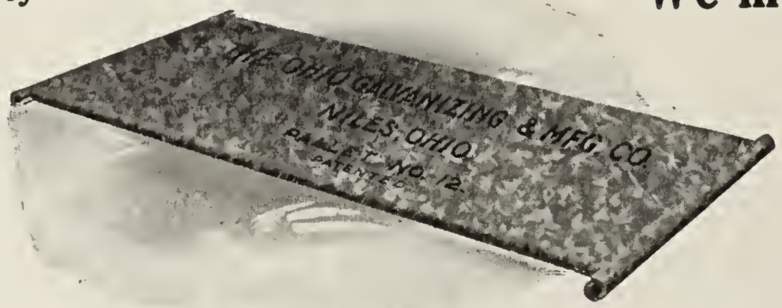


Storage Battery Platform Truck

THE ATLAS CAR and MANUFACTURING COMPANY

Engineers 1140 Ivanhoe Road, Cleveland, Ohio *Manufacturers*

Style No. 12



A Time and Money Saver

We make a Steel Pallet that is just exactly what your class of work requires

Our line of manufacture covers the entire Steel Pallet field.

No matter what pattern you need. If you require something quite out of the ordinary, so much the better. We can make it right, deliver it promptly and for the least price. Because we are specialists in this particular line.

Simply let us know what you need or send for complete descriptive matter.

ALL PALLETS MADE FROM HYDRAULICALLY LEVELED SHEETS

The Ohio Galvanizing & Mfg. Co.
Niles, Ohio

THE

BOYD BRICK PRESS

"Built Up to a Standard—Not Down to a Price"
FOR THE MANUFACTURE OF

Fire brick and shapes from fire clay, magnesite, chrome, and other materials. Regular 9 in. series, large and small 9 in. series, and tile up to 12x24x4 in. The only mechanical press that has been successful in the production of pressed brick and large shapes from dead-burned magnesite.

High-grade smooth face brick, round edge face brick, and corrugated face brick without addition of complicated special attachments or scratching devices, and common building brick, from shale, clay, and other materials.

Write for Bulletin AB and mention this advertisement.

CHISHOLM, BOYD & WHITE CO.
Office and Works, 57th and Wallace Sts., Chicago, Ill.
Established 1888

HIGH GRADE
CLAYS
OF EVERY KIND—FOR EVERY PURPOSE
United Clay Mines Corporation, *General Offices,* Trenton, N. J.
Western Office, East Liverpool, Ohio

Brookville Gas Locomotives

With both Fordson Tractor and Ford Ton truck power units —Reliable, efficient and economical, plus all advantages of local Ford and Fordson Service applying to repairs and replacement parts.

Photograph at left shows both types on the operation of the Wyandot Clay Prod. Co., Upper Sandusky, O. Mr. Hare states:

"We are using both types of your locomotive and are very highly pleased with them. Their upkeep beyond gas and oil has been practically nothing and either locomotive could do much more than we require of it. We consider them a splendid investment."

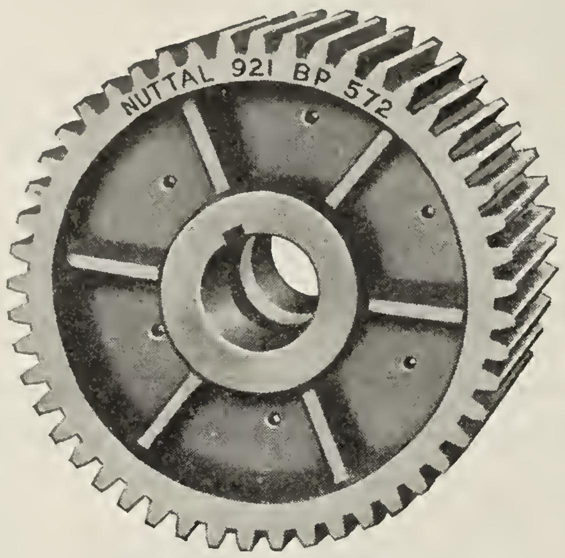
Five years of experience back of our product—Don't experiment.

Brookville Truck & Tractor Co., Brookville, Pa.

GOOD USED EQUIPMENT WANTED—

The demand is greater than the available supply. Look over your plant, see what machinery is not being used, or which you will replace with larger capacity, and then advertise in "Brick and Clay Record" Classified Department. Published every other Tuesday.

BRICK AND CLAY RECORD, 407 S. Dearborn St., Chicago, Ill.



A Nuttall BP Spur Gear

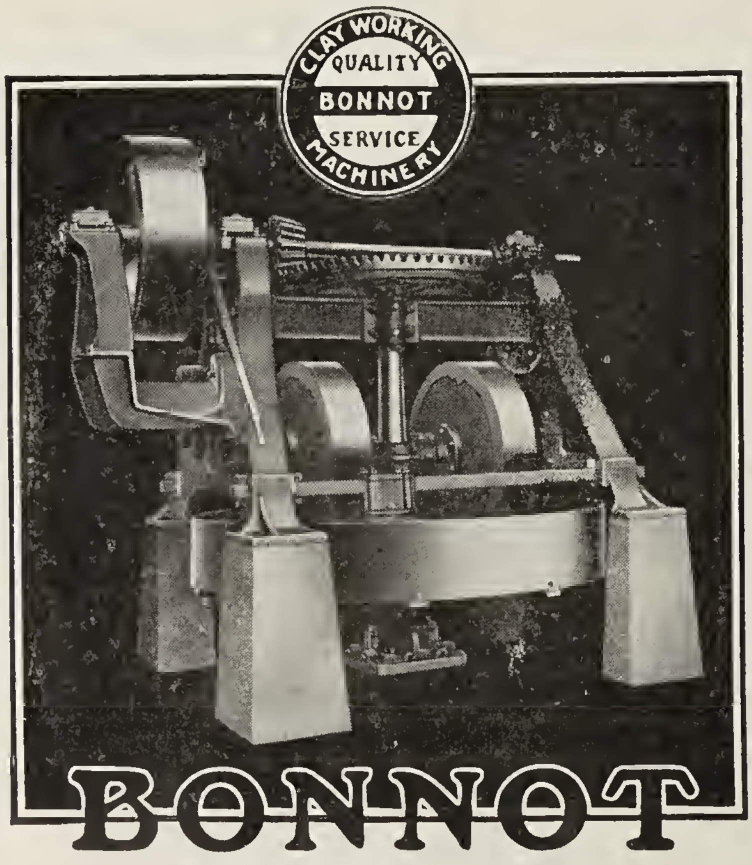
MR. GEAR USER

If you are using cast-tooth or untreated gearing, we can show you how to materially reduce gear costs amounting to as high as seventy per cent.

Send us a trial order.

R.D.NUTTALL COMPANY
PITTSBURGH PENNSYLVANIA

Philadelphia Office: 420 Land Title Bldg.
Chicago Office: 2133 Conway Bldg.



Nine Foot Dry Pan

Metropolitan Paving Brick Company

Since 1892

"Two of the (BONNOT 9′) dry pans were installed at the Royal Plant in 1892 and both of these machines are still *giving good service daily*" — letter from O. W. Renkert, President, June 21, 1923.

Bonnot Dry Pans were good in 1892—they're even better NOW

The Bonnot Company
CLAY WORKING MACHINERY
CANTON, OHIO

Erecting W-S-M Type L Gas Producers

is convincing evidence that even this part of a W-S-M producer installation has been carefully studied from the ground up.

The foundation is made to serve as a conduit for the steam and air and provides for a bin for the ashes.

The gas house is of the simplest construction and is designed so that when additional producers are installed it can be extended at the least expense.

First cost, installation, operation, maintenance and capacity all combine in the W-S-M producer plant to deliver the largest amount of good gas for the smallest investment.

Whether based on square foot of area occupied, cubic foot of building contents, or weight of materials required for equipment and building, the W-S-M producer will gasify the greatest amount of coal per unit of measure.

MORE COMPLETE DETAILS ARE GIVEN IN OUR NEW BULLETIN NO. 77.

—The No. 8 producer gasifies 1500 to 2750 lbs. coal per hour.
—The No. 10 producer gasifies 2500 to 4000 lbs. coal per hour.

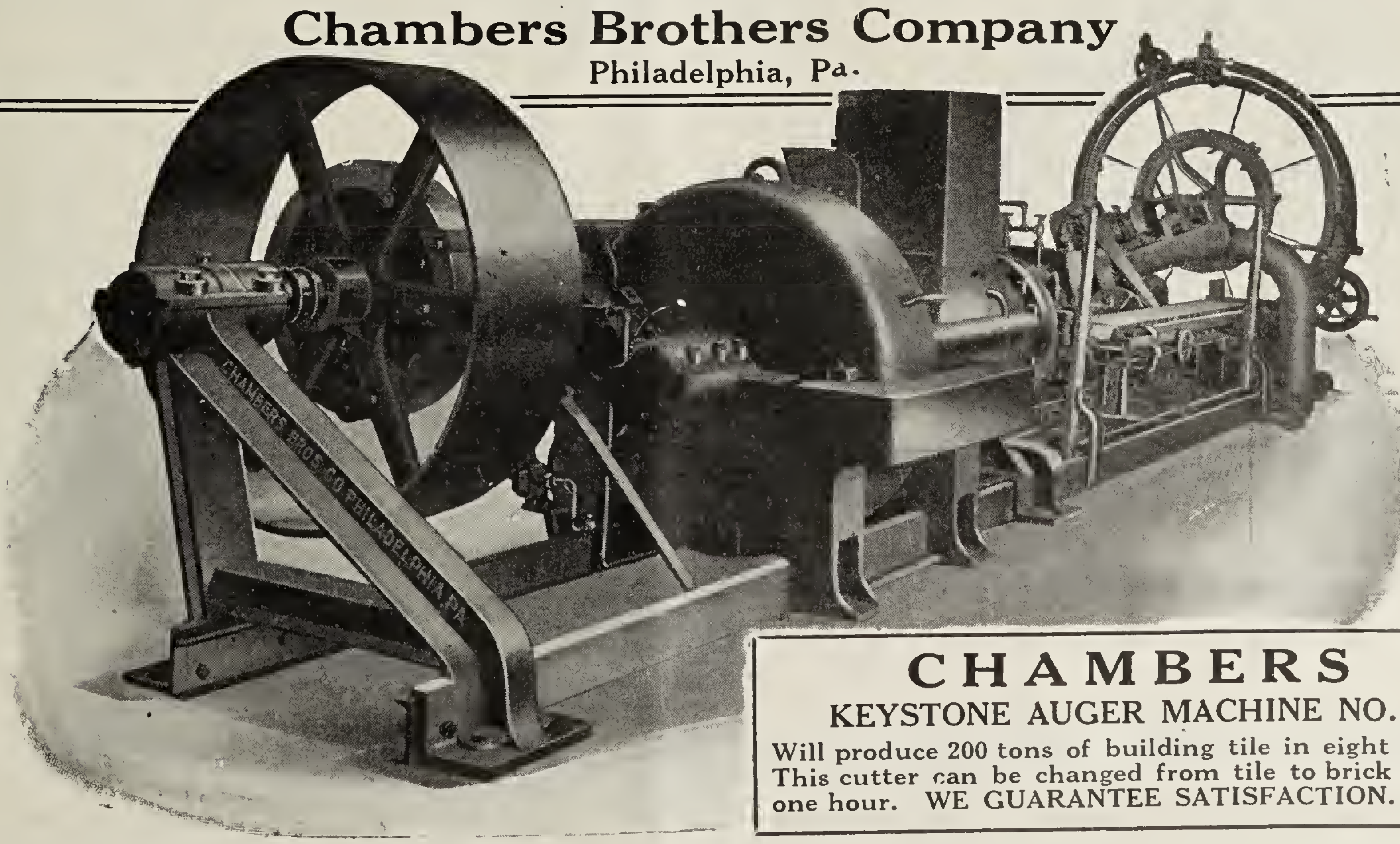
The Wellman-Seaver-Morgan Company
7030 Central Ave.
CLEVELAND, OHIO, U. S. A.

CHAMBERS BRICK MAKING MACHINERY

Manufactured to render UNUSUALLY LONG and SATISFACTORY SERVICE

CHAMBERS EQUIPMENT INCLUDES: Disintegrators, Granulators, Crushers, Dry Pans, Feeders, Pug Mills, Clay Grinding and Mixing Machines

Chambers Brothers Company
Philadelphia, Pa.



CHAMBERS
KEYSTONE AUGER MACHINE NO. 1
Will produce 200 tons of building tile in eight hours. This cutter can be changed from tile to brick within one hour. WE GUARANTEE SATISFACTION.

General Motors Trucks

A GMC Truck used by The Bowen Brick & Supply Co., Cleveland, Ohio

GMC

The GMC has earned such a nation-wide reputation for dependable, economical transportation among contractors and suppliers of building materials that this strong, sturdy truck is finding a growing preference among more and more companies in the building industry. GMC trucks are made in sizes that meet the hauling needs of every size of business.

GMC chassis list at the factory as follows: 1-ton $1295; 2-ton $2375; 3½-ton $3600; 5-ton $3950; tax to be added.

GENERAL MOTORS TRUCK COMPANY
DIVISION OF GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN

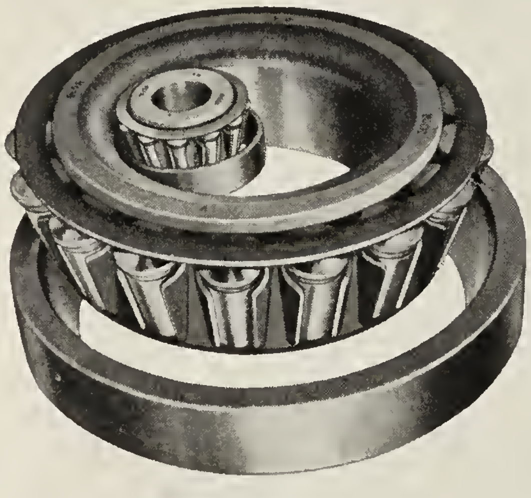
SAVE POWER---

and Thrust Troubles

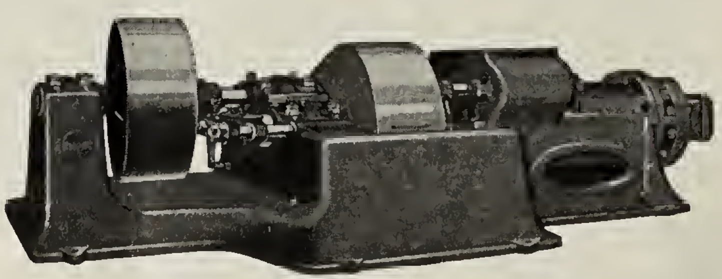
on

INTERNATIONAL

Auger Machines, Pug Mills and Pans



Let us tell you about the above heavy, large Roller Thrust Bearings



INTERNATIONAL CLAY MACHINERY COMPANY
DAYTON, OHIO, U. S. A.

FATE CLAY WORKING MACHINERY

To build Brick Machinery and to have the purchaser write that after being used twelve years, with marked success, the machines are still giving good service, is proof of design and handicraft.

Please read the letter in adjoining panel from the Ft. Wayne Brick Co., and write us for Bulletins No. 1A and 4.

FORT WAYNE BRICK CO.
Ft. Wayne, Ind., Oct. 20, 1923.

The Fate-Root-Heath Co.,
Plymouth, Ohio.

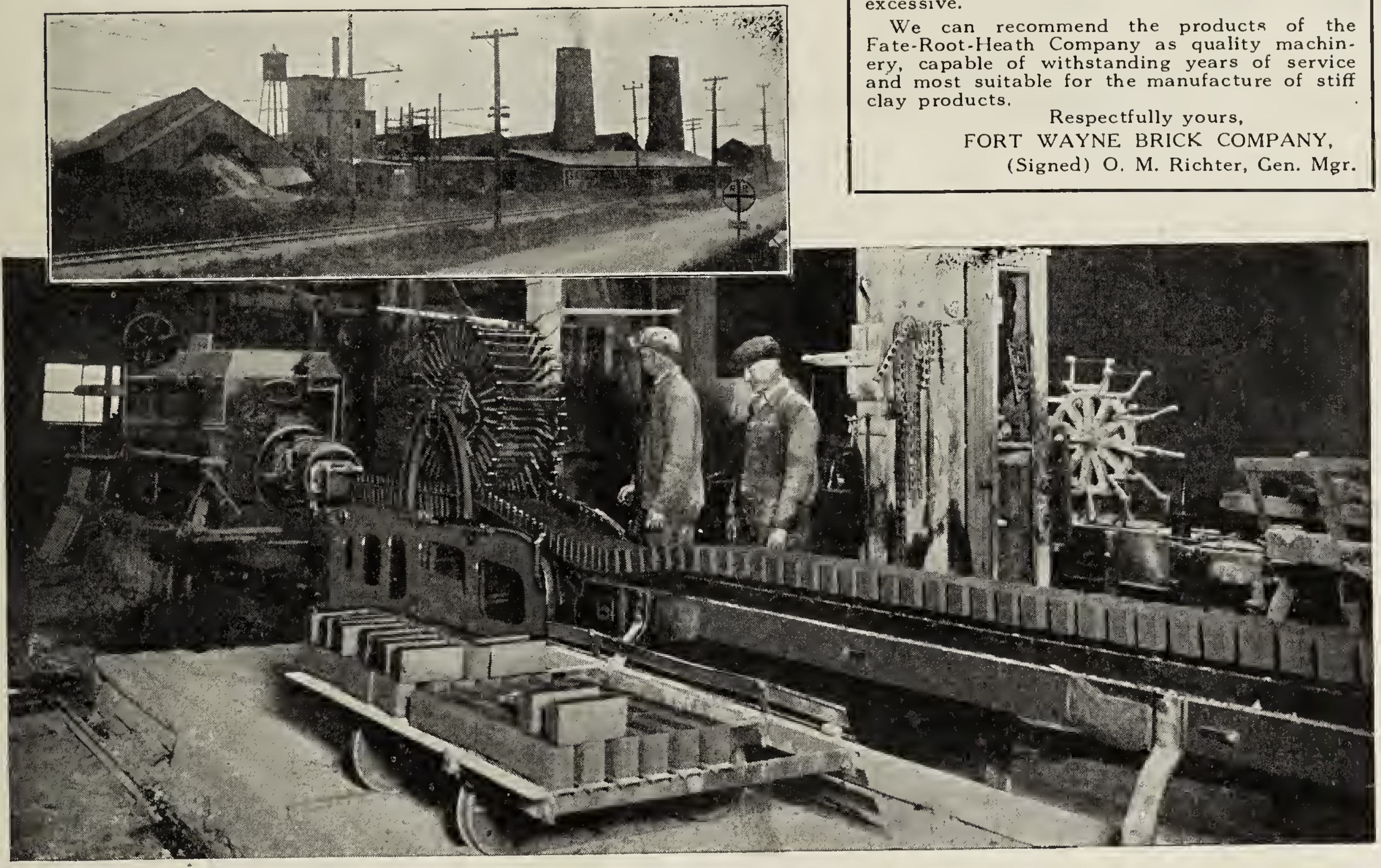
Gentlemen:

For more than twelve years we have been using, with marked success, a Fate Premier Brick Machine in connection with your Type 1 JB Side Cutter for the manufacture of stiff mud brick.

We are pleased to state, considering the long service given these two units, together with others of your manufacture, they are still in good running order and repair costs are not excessive.

We can recommend the products of the Fate-Root-Heath Company as quality machinery, capable of withstanding years of service and most suitable for the manufacture of stiff clay products.

Respectfully yours,
FORT WAYNE BRICK COMPANY,
(Signed) O. M. Richter, Gen. Mgr.



Plant and Equipment of Ft. Wayne Brick Co., Ft. Wayne, Ind.

PLYMOUTH GASOLINE LOCOMOTIVES

Fenton-Parker Material Co., San Diego, Calif.

Kelly Island Lime & Transport Co., Cleveland

In Clay Pits, as well as sand and gravel, and quarrying,—anywhere if track can be laid,—the Plymouth Locomotive is the economical method of haulage.

There is no industrial locomotive so capable as the PLYMOUTH, and none so universally demanded in construction work, big or little projects. Ask us or the man who owns one before you buy.

THE FATE-ROOT-HEATH CO., PLYMOUTH, OHIO

KEEPING POSTED

CHAPTER III.

We often hear the expression "Brain Ore". It is an apt one, because the brain is like a refining furnace which converts the "ore" of information—mere dead facts and figures—into IDEAS.

Every waking minute of our lives, we are, consciously or unconsciously, carrying on this converting process.

It is the man who applies himself in a definite way to digging brain ore and fluxing it into his personality, who makes the most rapid strides.

Now, men dig for ore, where they *know*—or have every reason to believe—the ore exists in the richest or most highly concentrated form.

Every class journal is a rich "ore body." Two kinds of ore are always found — different somewhat in structure, but equally rich and equally available for the mental smelter. In some journals these ores are clearly stratified — a stratum of ads, a stratum of text, and another stratum of ads. In others, the ad stratum is largely intermixed with the editorial.

Some wise man said that "next to knowing facts is to know where they can be quickly found."

Business and industrial life is so complex that it is hopeless for any one brain to hold all the information it needs and can use. But the sensitive plate of the mind has a marvelous faculty of *recording* what the eye sees, and *remembering* where it saw it—even to the position on the page.

If one has not the time to read his trade paper in detail, he should at least scan every issue from cover to cover, including the ads, in order to give it this mental indexing process.

The next necessary step is to preserve and BIND all the issues, so that the publishers' printed index may make it a matter of only a moment to dig up any specific "ore body" that lies in that invaluable, and almost inexhaustible region of information.

A library, comprising bound volumes of all the authoritative class publications in any field of endeavor, transcends in usable mental wealth a complete course in the best technical school in that field.

R. R. SHUMAN

Classified Advertisements

Classified advertisements are inserted at the following rates: First insertion, eight cents per word, the captions "For Sale," "Wanted," and address, to be counted as a part of the ad. Additional insertions, six cents per word per insertion. No advertisement inserted for less than $1.00 per insertion. Cash must accompany all orders to insure insertion.

WANTED—HELP

WANTED—Inside foreman for Ohio brick and tile plant. Inquire 12-Exp. Foreman, care of "Brick and Clay Record." 12-2

WANTED—Man to make moulds and take charge of special shape moulding in fire brick plant. Must be able to work from blue prints. Good opportunity for right man. Address 12-1 MM, "Brick and Clay Record," 407 S. Dearborn St., Chicago, Ill. 12-1tf

WANTED—General plant manager for a long established face brick and hollow building tile plant, located in the middle northwest. Prefer technical trained man with established record. Rare opportunity for an ambitious executive with progressive ability. Give full information with appreciation. Write 12-1 GPM, care of "Brick and Clay Record." 12-2

WANTED—POSITIONS

EXPERIENCED BRICK MAN desires position as superintendent or manager of brick plant. Employed but desires change. Thorough knowledge of manufacture and selling. Best references. Address: 12-KT, care of "Brick and Clay Record." 12-2P

CERAMIC ENGINEER with many years' practical and technical experience in several spheres of the Ceramic Industry, Face Bricks, Fire Clay Bricks, Silica Bricks, Enameled Bricks and Wall Tiles, Vitrified Floor Tiles, Plants, wants a responsible position as Assistant General Manager, Production Manager or Division Superintendent. Now in charge but has good reason to change. Address: 11-2Practical, care of "Brick and Clay Record." 11-2-3

WANTED POSITION as general manager or superintendent of brick or hollow ware plant. Have had various kind of experience. Am an engineer. Have chief license. Understand burning in other yards and understand brick and tile plant from ground up. Engaged now but wish change for good reason. Address: 11-2HW, care of "Brick and Clay Record." 11-2-1

WANTED POSITION as manager or superintendent. Have been successful in the practical and technical operation and overhauling of clay plants, clay, shale, fire clay, glazed and unglazed hollow ware. Address: 10-2 JAV, care of "Brick and Clay Record." 10-2-6

SUPERINTENDENT of wide experience—skilled in every detail in the manufacture of brick and tile, wants position with some good concern. Best of references exchanged. Reasonable salary. Address: 12-2HWH, care of "Brick and Clay Record." 12-2TF

MISCELLANEOUS

WANTED—Various lines to represent on the Pacific Coast. Address: B. C. Berg. 5330 Santa Fe Avenue, Los Angeles, Calif. 5-2TF

GREATEST OF ALL IMPROVEMENTS ON DOWN-DRAFT KILNS

1. Absolute control of fire by burner
2. Uniform burn from top to bottom
3. 25-30 per cent. fuel saving
4. Burn in less time, no more trouble to get the heat to the bottom of the kiln
5. Can be applied to every down-draft kiln with little expense. If desired can furnish references.

JOS. LENGSHOLZ
1219 Dewalt Street,
Massillon, Ohio.

12-2-1

WANTED — EQUIPMENT

WANTED — Weeks pot machine. C. T. Ward, Tonica, Illinois. 12-3P

IN THE MARKET for immediate delivery, 900 galvanized rolled edge metal pallets, 10 inches wide, 34 inches long. B. Mifflin Hood Brick Company, Atlanta, Ga. 11-2-2

WANTED—One 9x14—36 in. gauge locomotive; one 100 Boom Drag Line; one Steel Water Tower and Tank. Above must be in first class condition. What Cheer Clay Products Co., What Cheer, Iowa. 12-2-1

WANTED—One Brewer or Wonder brick and tile machine of small capacity. Must be in good repair. Give price and location. Jonesboro Brick Co., Box 497, Jonesboro, Ark. 12-2

WANTED — Second-hand belting for brick plant use; belt clay elevator complete; stiff-mud dryer cars; transfer cars; clutch pulleys. Give list of what you have cheap with prices attached. F. B. Moudy, Portage, Pa. Box 255. 12-2P

FOR SALE—CLAY LANDS

1,000 acres for sale or for long term leases. High grade fire clays, shales and gas coal. 150 feet above and abutting plant sites. Can excavate by electric shovels, natural gravity to work. Electric power wire and railway now in. Products from these clays in great demand. Profitable market for output any size of plants and any color guaranteed. 150 miles to Chicago. Brick and other products made from these clays submitted. Address: 12-MX, care of "Brick and Clay Record." 12-3P

FOR SALE—PLANTS

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WEATHER
Storms - rain, Sleet - and perhaps Snow.
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you can't argue with the weather

AutoBrik Machine

Martin-Lancaster Pipe Rack Brick Dryer

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When your men do not do this or that—a friendly conference usually produces the desired results.

But you cannot argue with the weather. All the coaching and coaxing within your power will not ward off a rain, hail or snow storm that will in fifteen minutes ruin a whole day's work, or often lose for you many days' output and cost you hundreds of dollars in damage—not to mention serious delay in production.

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The Martin-Lancaster Steam Pipe Rack Brick Dryer is a rapid dryer. Brick made during the day are dried during the night and taken to the kiln the following day. The steam used is of low pressure and circulated by a vacuum system.

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